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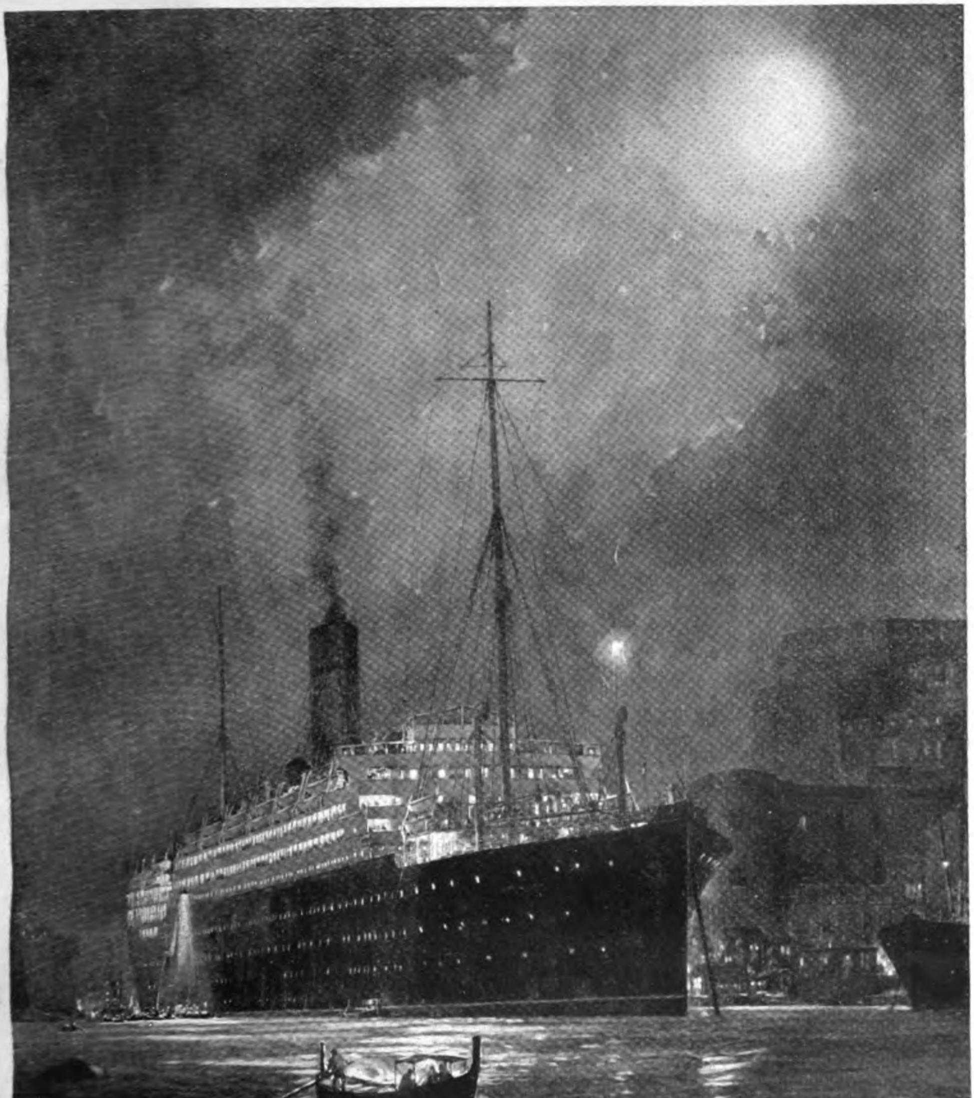

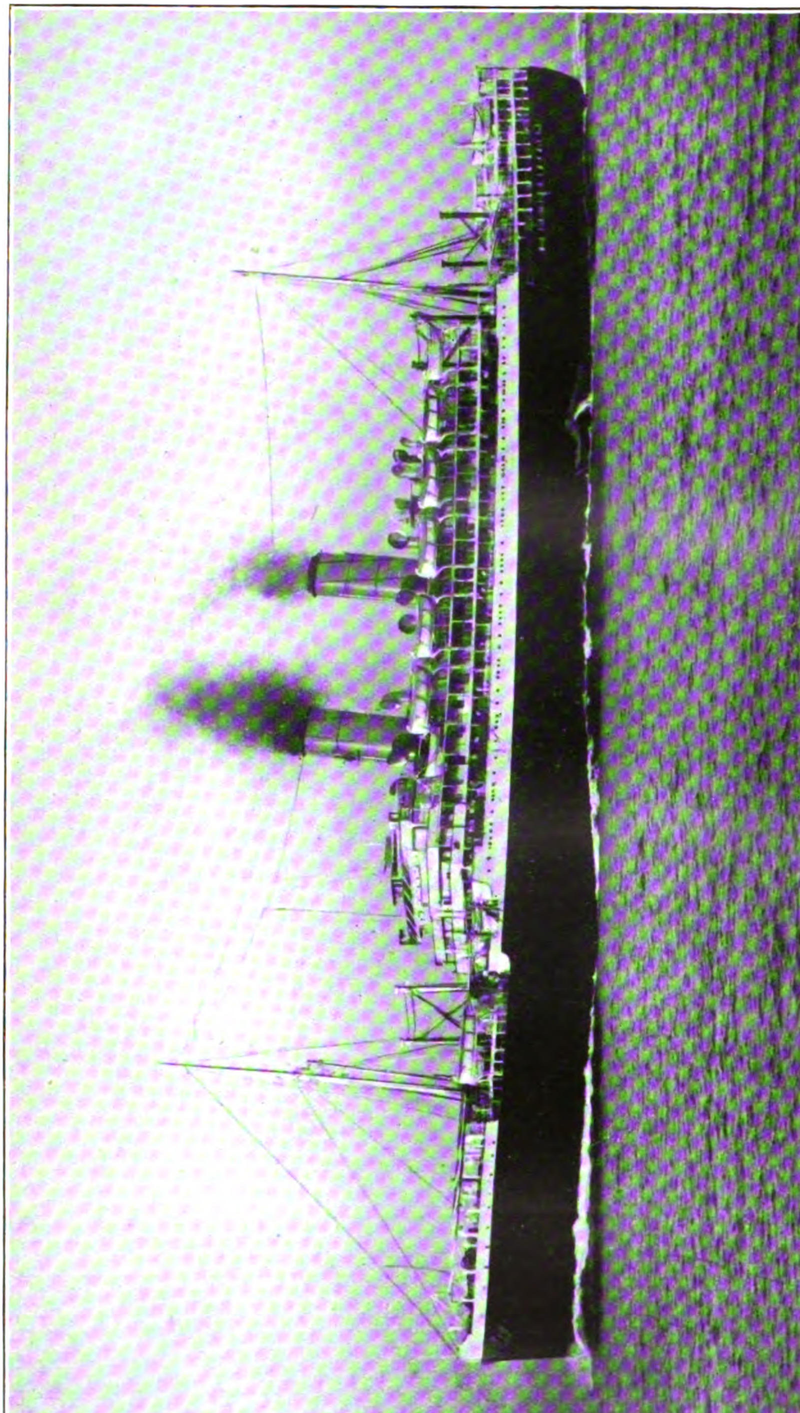

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[See page 183.

BRASSEY'S

NAVAL AND SHIPPING ANNUAL.

1927.

EDITED BY

SIR ALEXANDER RICHARDSON,

Associate Inst. Nav. Arch.;
Vice-President Junior Inst. Eng.; Companion Inst. Mar. Eng;
and Member Assoc. Technique Maritime et Aéronautique

AND

ARCHIBALD HURD,

Associate of Inst. Nav. Arch.; Hon. Freeman of the
Worshipful Company of Shipwrights.

ART EDITOR

ARTHUR J. W. BURGESS, R.I., R.O.I.

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PREFACE.

Far-reaching changes in the application of physical science to sea transport, as well as to sea defence, are taking place, while at the same time political influences are reacting, to an extent which is little appreciated, on the services of merchant shipping in all parts of the world, as well as upon the distribution of the men-of-war of the maritime Powers. The present issue of "Brassey's Naval and Shipping Annual" reflects these movements, which cannot be ignored either by those who are concerned with the carriage of passengers and goods, or by those who control the fleets which ensure the freedom of movement of merchant shipping and fulfil other important functions. Developments of a radical character are taking place in engineering, affecting both ships of commerce and ships of war, and the naval authorities are incorporating their deductions from the experiences of the Great War in the designs of cruisers, destroyers and submarines. Everything concerned with sea affairs is undergoing a change which is finding expression in a variety of ways and is, in particular, affecting the equipment of all types of ships. The illustrations published, particularly of later cruisers and destroyers, show the trend in the design of these vessels. For these and the naval reference section generally Mr. H. H. Palmer, of the Royal Corps of Naval Constructors, has, with official approval, been responsible, succeeding in this work Mr. F. T. Blackman, on the latter's promotion.

Commander Charles N. Robinson, who has been a contributor to "Brassey's Annual" for so many years, takes a broad survey in the first chapter of the Naval Section of the progress of the naval forces of the British Empire, and incidentally points out that, with the approaching completion of the battleships Nelson and Rodney, the battle fleets of the principal navies of the world will reach a state of equilibrium in accordance with the ratios set forth in the Washington Naval Treaty. When these two battleships pass into commission, no capital ships will be under construction for any Power, but naval opinion holds that these will not be by any means the last vessels of the type to be built, but represent rather a new phase in naval construction, which will be entered upon as soon as the replacement programmes are taken in hand under the terms of the Treaty. So long as no limits are placed upon modern weapons of war, the big ship will be essential in order that adequate defensive measures against mines, submarines and aircraft bombs may be

associated with superior offensive qualities. As Commander Robinson remarks, good progress is being made with the British cruiser programme, while at the same time, under the pressure of economy, the strength of the British squadrons and flotillas have been greatly reduced. In this connection, remarkable figures are given in tabulated form indicating the extent to which the British strength at sea has been reduced, without, unfortunately, corresponding economies in the strength of the *personnel* of the Royal Dockyards. No review of British naval progress would be complete which ignored the activities of the Dominions, and Commander Robinson supplies interesting particulars of the naval efforts which are now being made by Australia, New Zealand, South Africa and Canada.

In his review of the evolution of foreign navies, Commander H. L. Hitchins reveals that there is at present no indication that any of the Powers are taking any action with a view to replacing obsolescent capital ships in accordance with the provisions of the Washington Treaty. Attention is being devoted exclusively to the construction of cruisers, destroyers and submarines, and the utilisation of air power for the purposes of sea defence. The action in these respects which is being taken by the United States and Japan, as well as by France and Italy, is of particular interest to students of naval affairs. Nor, as is shown, are the other foreign navies remaining inactive. It will be noted, however, that the Minister of Defence of Denmark has stated that he regards it as his duty to make the War Office and Admiralty of that country "as superfluous as possible."

The succeeding chapters, which deal with comparative naval strength and the distribution of the world's fleets, are essential to a correct appreciation of the significance of these records of the progress of the naval policy of the British Empire and foreign countries. The widespread impression that, though capital shipbuilding has for the time been arrested, the naval Powers are engaged in a new form of rivalry, and are laying down an unusually large number of cruisers, destroyers and submarines, is controverted. The only new cruisers which are being built are needed to take the place of vessels which have become, or are becoming, obsolete. So far as the British Empire is concerned, construction is not even keeping pace with the scrapping policy, for while at the end of the war there were either in commission or paid off 104 cruisers, that number has now been reduced to 63, of which 11 are building and 3 are about to be laid down.

The tables reflecting the distribution of fleets show that British naval power is well represented in European waters and that the navies of the United States and Japan dominate the Pacific, where the British Ensign, though British territories and commercial interests are so considerable, is borne by no armoured vessel of the first class for the first time in modern times, apart, of course, from the period immediately preceding the Great War.

The chapter dealing with the naval policy of Japan, by Commander Ishiro Sato, of the Imperial Japanese Navy, will be

read with close interest in the light of the particulars of Japan's strength at sea. The impression is current that Japan "has been the pace-maker in warship building in the aftermath of the Washington Conference." This writer reminds us that Japan is undergoing a social revolution which is reacting on its naval necessities. Agricultural Japan, we are told, has passed away, and an industrial Japan has sprung up, with the result that the population is becoming increasingly dependent upon imports and exports from overseas. The Japanese Navy, it is contended, must now defend the country against invasion and at the same time protect a growing foreign trade which feeds the nation and its industries. Commander Sato's information on the economic basis of Japanese naval policy is of special interest in view of his statement that the Japanese naval authorities regard a new shipbuilding plan, embracing cruisers, destroyers and submarines, as "an absolute necessity."

Sir George Thurston, who reflects the most progressive phases of naval architecture, has in former issues of "Brassey's Annual" suggested modifications in the design of the battleship and cruiser, which have attracted widespread attention. He now discusses the future of the destroyer, directing attention to the remarkable vessels which are being built in British shipyards as well as in France, Italy and Spain. He recalls the various uses to which destroyers were put during the Great War, and discusses variations of the present methods of arranging the gun armament. Having thus cleared the ground, Sir George Thurston describes his idea of a super-destroyer. He contends that such a type, while not exceeding to any appreciable extent the cost of the present flotilla leader, would carry out all the work now done by destroyer flotillas, and, owing to a more powerful torpedo armament, would be a greater menace to the capital ship; its better sea-keeping qualities and, even possibly, mine-laying and plane-carrying capabilities, would also render it more efficient for scouting and other purposes than the destroyers which are now being built. Sir George Thurston's chapter is supplemented by one on cruiser design and cruiser warfare, in which Lieutenant-Commander A. Colquhoun Bell discusses this subject in full knowledge of recent war experience, and comes to the conclusion that the results of the cruiser war seem to show that the existing cruiser types are ill suited to the probable demands of any future war.

In an incisive chapter, Captain Alfred Dewar discusses the proposal to create a Ministry of Defence. He summarizes briefly the various proposals which have been put forward during the past few years with the plea that they would promote at one and the same time economy and efficiency. He cites a volume of evidence of the most authoritative character which has already accumulated against any radical change in the organization of the Admiralty, and discusses with knowledge the specific schemes which have been submitted to the Committee of Imperial Defence for co-ordinating the fighting services. "The idea of seeking increased efficiency in the corridors of a huge new centralized Government department," in his opinion, "is superbly absurd."

The two final chapters in the Naval Section are contributed by

Captain Edward Altham and Captain P. D. Acland. The former controverts the popular view that the money voted for the British Navy goes into the pockets of a comparatively small section of the community, to be found mainly in the great naval ports. He reveals that there is hardly any part of the United Kingdom to which, in varying degree, some of the money spent in the maintenance of the Navy does not percolate. Captain Acland is concerned with the development of air power, and in particular discusses the future of the seaplane, the flying boat, and the amphibian, and his remarks must be especially interesting to those who have appreciated the significance of Sir Alan Cobham's flight to and from Australia, when he relied on a seaplane in recognition of the maritime character of the British Empire.

As has been the case for several years past, the section of "Brassey's Annual" which deals with the progress of merchant shipping opens with a chapter by Sir Westcott Abell, Chief Ship Surveyor of Lloyd's Register of Shipping. He reviews the general shipping situation, and directs attention to the superabundance of tonnage which is afloat, and the amount of tonnage which is laid up for want of employment. One significant fact is to be noted. Whereas the tonnage owned in the United States is over 600 per cent. greater than it was in 1914, the comparable tonnage actually at sea and in use is only about two and a half times the pre-war figure. His general conclusion is that the world has increased its merchant fleet during the last thirteen years by no less than 20 million tons; that some 5 million tons of this has been due to the increasing needs of the oil industry; but he adds that "even if world trade were equal in volume to the pre-war amount there would still be a surplus of some 10 to 15 million tons to be dealt with before the world's merchant fleet could really be said to equal its pre-war efficiency." Sir Westcott Abell concludes with some account of the progress of merchant shipping in foreign countries, describing at some length the revival which has occurred in Italy under the influence of "the most complete scheme of shipbuilding subsidy that the world has ever seen." Mr. Cuthbert Maughan's account of freight developments in 1926 forms an essential complement to this survey of shipping throughout the world.

Mr. Walter Runciman, who writes on "Some Aspects of British Shipping, 1926," has studied economic problems generally, as well as the peculiar problems of the British mercantile marine, from the seclusion of Whitehall, as President of the Board of Trade, as well as from the angle of vision of St. Mary Axe, for he is now President of the Chamber of Shipping of the United Kingdom. He prefaces his contribution with a general review of the considerations which must be in the mind of the shipowner, whether he be concerned with liner or tramp vessels, and then emphasizes the important part which profits play in the economy of an industry, which is vital to an island people. This preliminary review leads Mr. Runciman to examine the suggestion that if shipping were nationalized losses would be converted into profits, and he proves with characteristic lucidity, by pointing to the unfortunate experiences of the United

States and other countries, that only under the energizing influence of private enterprise can shipping be maintained efficiently and profitably. There are special considerations applying to the British people which, as he explains, reinforce these general arguments, for without the invisible exports which freights provide, the country's trading account could not be balanced from year to year. Finally, Mr. Runciman sounds a note of warning against any "tampering with the delicate adjustments of international trade." He declares specifically that "experiments in State administration can be made only at grave risk, not to the shipping industry alone, but to all the millions who depend on foreign trade, directly or indirectly, for their livelihood." Either half the population of the British Isles would starve or the whole would have to go on half-rations, or bid farewell to some of the varied produce of the earth which has brightened the tables of every class of the community.

Everyone who is interested in the future of sea transport will read with interest the two succeeding chapters. In the first Sir John Biles deals specifically with high steam-pressure turbines, while Mr. James Richardson refers to the subject incidentally in his usual review of marine engineering. Sir John Biles has come to the conclusion that the prospects for the high steam-pressure turbine is bright, especially in the field of larger installations. At present Sir Charles Parsons' latest ideas have been applied only in a comparatively small ship on the Clyde, the King George V., and as a result of the trials it is claimed that high pressures are quite practicable in a sea-going ship. Mr. Richardson, after discussing briefly the future of the marine turbine, and the machinery in the new Canadian Pacific Steamship Company's passenger liners, deals with the use of Deisel electric auxilliaries, which are to be fitted in these vessels. In view of the fuel research work which is being pressed on by the Government, Mr. Richardson has some remarks on the use of pulverized coal in merchant shipping, and after references to developments in reciprocating steam engines and the Vulcan gearing, Mr. Richardson deals with double-acting Diesel engines. It is not often a writer has the courage to admit an error, but Mr. Richardson confesses his changed opinion as to the limiting power below which the double-acting engine cannot be expected to compete economically in respect of first cost and general suitability with a single-acting engine.

A subject which is being discussed more and more in shipping circles in view of the tendency of world trade, is the future of the passenger ship as cargo carrier, and Mr. John P. Taylor's article on this subject will attract a good deal of attention. The design of a passenger liner is largely a matter of compromise, varying according to the route upon which she will be employed, the love of luxury of the type of passengers which she will carry, and the volume of cargo which will be available. Everything seems to point to the passenger liner becoming an increasingly potential force in the handling of cargo, with a reaction on tramp shipping, which may be more considerable than is generally appreciated. Mr. Taylor's article may be studied with profit in association with the particulars

which are given in the later chapter of some of the more notable merchant ships whioh have recently been completed for sea. In this chapter Mr. W. H. Clapham reviews some of the more noteworthy additions which have recently been made to the mercantile marines of the world.

Every effort has been made this year to improve further the scope and usefulness of the two reference sections of "Brassey's Annual" which deal with naval and merchant shipping matters. The whole of the statistics have been carefully revised and extended, while at the same time the number of profiles, both of ships of war and commerce, has been considerably increased. We publish a picture of the two new British battleships, Nelson and Rodney, which will pass into commission in the course of the year 1927. Though many details of their design and armament are still regarded as confidential, the full-page plate which is now published supports the belief that these vessels represent as revolutionary a development of the capital ship as did the original Dreadnought, when she took the water twenty years ago.

It is our pleasure once more to acknowledge the kind co-operation which has been given us by naval officers, shipowners, shipbuilders and others in developing and improving "Brassey's Annual," which remains the only publication of its kind either in the British Empire or any foreign country.

ALEXANDER RICHARDSON.
ARCHIBALD HURD.

NAVAL SECTION.

(*From a drawing by Arthur J. W. Burgess.*)

H.M. BATTLESHIPS NELSON AND RODNEY (35,000 TONS).

(*Building respectively by Sir W. G. Armstrong, Whitworth & Co. (engines by the Wallsend Slipway & Engineering Co.), and Cammell Laird & Co., Ltd.*)

(*Unofficial.*)

CHAPTER I.

Naval Forces of the British Empire.

No outstanding event comparable to the adoption of a five-year programme of warship construction in the previous year marked the course of 1926. Progress in the direction of economy in naval expenditure continued, and was chiefly marked by the reduction of 2½ millions in the Navy Estimates and by the closing of Rosyth and Pembroke Dockyards. Some interesting facts in relation to dockyard policy are referred to later in this chapter. As regards the strength of the British Fleet relatively to those of other countries, this, on the whole, may be said to have remained at the one-Power standard adopted immediately after the war, although the scrapping of destroyers and submarines long before new craft are available to take their places has weakened it in certain essential types. A Preparatory Commission for a new Disarmament Conference sat for some months of the year at Geneva, but little or no real advance was made in the direction of a reduction in the strength of navies by international agreement.

With the approaching completion of the first replacement battleships authorized by the Washington Treaty, the Nelson and Rodney, the class for which they are substitutes was struck off the list, viz. the Ajax, Centurion, King George V., and Thunderer, and the total of British battleships was reduced thereby from 18 to 16. This compares with 18 for the United States, but Great Britain has also four battle-cruisers, of which type there are none in the American Navy. Including both classes, the total tonnage of the British Empire at the end of 1926, on completion of the Nelson and Rodney, was 558,950 tons, and United States 525,850 tons. The Japanese Navy has six battleships and four battle-cruisers aggregating 301,320 tons.

After continuous delays, the last warships of the emergency war programmes were passed into service, and have proceeded to foreign stations. Also the first post-war vessel for the Royal Navy, submarine "X.1," was completed after further alterations and trials, and ordered to join the flotilla in the Mediterranean. In matters of *personnel*, new regulations in regard to engineer officers caused considerable controversy, and lower scales of pay for new entrants came into force, in common with reductions in the other fighting Services.

The arrival in the autumn of 1926 of the Dominion Premiers for another Imperial Conference again directed attention to the failure of the British peoples overseas to realize the manner in which, owing to the financial stringency, the Mother Country is obliged to economize on the Navy.

I. THE BRITISH NAVY.

New Construction.

The Navy Estimates for 1926–27, issued on March 5, 1926, aroused less attention than those of the previous year, as the net decrease in the total sum of £2,400,100 had been discounted in advance by a speech made by the First Lord at Torquay three weeks earlier; and, moreover, the programme of construction provided for was in accordance with the five-year schedule sanctioned at the end of July, 1925. It included the beginning of two "A" class cruisers of 10,000 tons; one "B" class cruiser of 8,000 tons (the first of this class to be put in hand); six "O" class submarines, one submarine depôt-ship, one repair ship, and four motor launches. A smaller proportion of these vessels than usual was allocated to the public yards, viz. one "A" class cruiser and one submarine, the remaining vessels being put out to contract. The debate on the Estimates in the House of Commons on March 11 was scantily attended, large numbers of members being apparently occupied, as the Prime Minister had advised, in studying the Report of the Coal Commission, then just published. The First Lord, in opening his speech, referred to the great advantage, from the standpoint of effecting economies, of a fixed programme. "If you know what replacements to expect in the next five years," said Mr. Bridgeman, "it is very much easier to make economical arrangements with regard to your existing fleet and to take risks which otherwise would not be justified, whereas if you are living in a state of uncertainty as to new ships to be built, you cannot risk getting rid of ships which you have, not knowing what you may get in the future." The fixed programme also enabled a more accurate and assured review of the consumption in fuel, armaments, and other equipment. It had the further advantage that the shipbuilding and armament firms had an opportunity of knowing the probable extent of future Admiralty orders, with the likelihood of lower prices to the Admiralty in consequence.

The policy of the Government in this respect was not seriously challenged by the House of Commons. The ballot for private members' motions had been secured by Mr. Scrymgeour, who moved an amendment that all expenditure in preparations for warfare is wasteful and futile, and that the Government should set an example to the world by a policy of disarmament through the League of Nations. The subsequent discussion revealed a sharp division in the Socialist ranks between those who believe in indiscriminate, solitary disarmament at all hazards, and those who have regard to other nations' policy in this respect, and prefer discriminate simultaneous disarmament. This cleavage was also apparent in the discussion on the vote for officers and men, when Mr. Lansbury moved to reduce the total by 100,000 men, which would have been equivalent to the abolition of the naval *personnel*. Sir Henry Slesser opposed the amendment on behalf of the official Socialist Party,

and Mr. Jack Jones also declared: "We are Nationalists first and internationalists afterwards. . . . I am one of those who believe if a country is worth having it is worth fighting for; if it is worth living in it is worth defending. . . . To carry this amendment to-night means the abolition of the British Navy. We cannot make such a move until we get an understanding with other peoples. The world is not made up of sentiment. Facts count for more than theories, and if theories do not fit the facts, so much the worse for the theories." On a division the amendment was rejected by 186 votes to 19—a majority of 167, and the vote agreed to.

The Nelson and Rodney.

Steady progress was made during the past year with the vessels of earlier programmes. In regard to battleships, the chief events were the launching of the Nelson, on September 3, 1925, and the Rodney, on December 17, 1925, the naming ceremonies being performed by Dame Caroline Bridgeman and H.R.H. Princess Mary respectively. Nearly three years had been occupied in bringing these vessels to the launching stage, and at the luncheon following the putting afloat of the Nelson, Sir Eustace d'Eyncourt said that the Armstrong firm hoped to finish their ship in another year. The Nelson, by the way, was the 102nd ship this firm had launched for the Royal Navy. At the launch of the Rodney at Birkenhead, Rear-Admiral Sir Alfred Chatfield, Third Sea Lord, said that it was not the sailors' view that this was probably the last battleship that would be built. Rather they looked upon her as the first of a great new line, and they hoped that many other "Rodneys" and "Nelsons" would be built in the future. One way in which the Nelson and Rodney have made their mark in the history of naval construction is that while all previous battleships, except perhaps the Hood, were built by men who had to imagine what a naval battle would be like, the Rodney had been designed by Sir Eustace d'Eyncourt to meet the requirements of a naval staff who were seeking to put into her the outcome of their war experience. After the war, said Sir Alfred, they made up their minds to grapple with the failings that revealed themselves between 1914 and 1918, and they believed these had been successfully overcome by the innovations made in construction, equipment, armament and machinery.

Need for Big Ships.

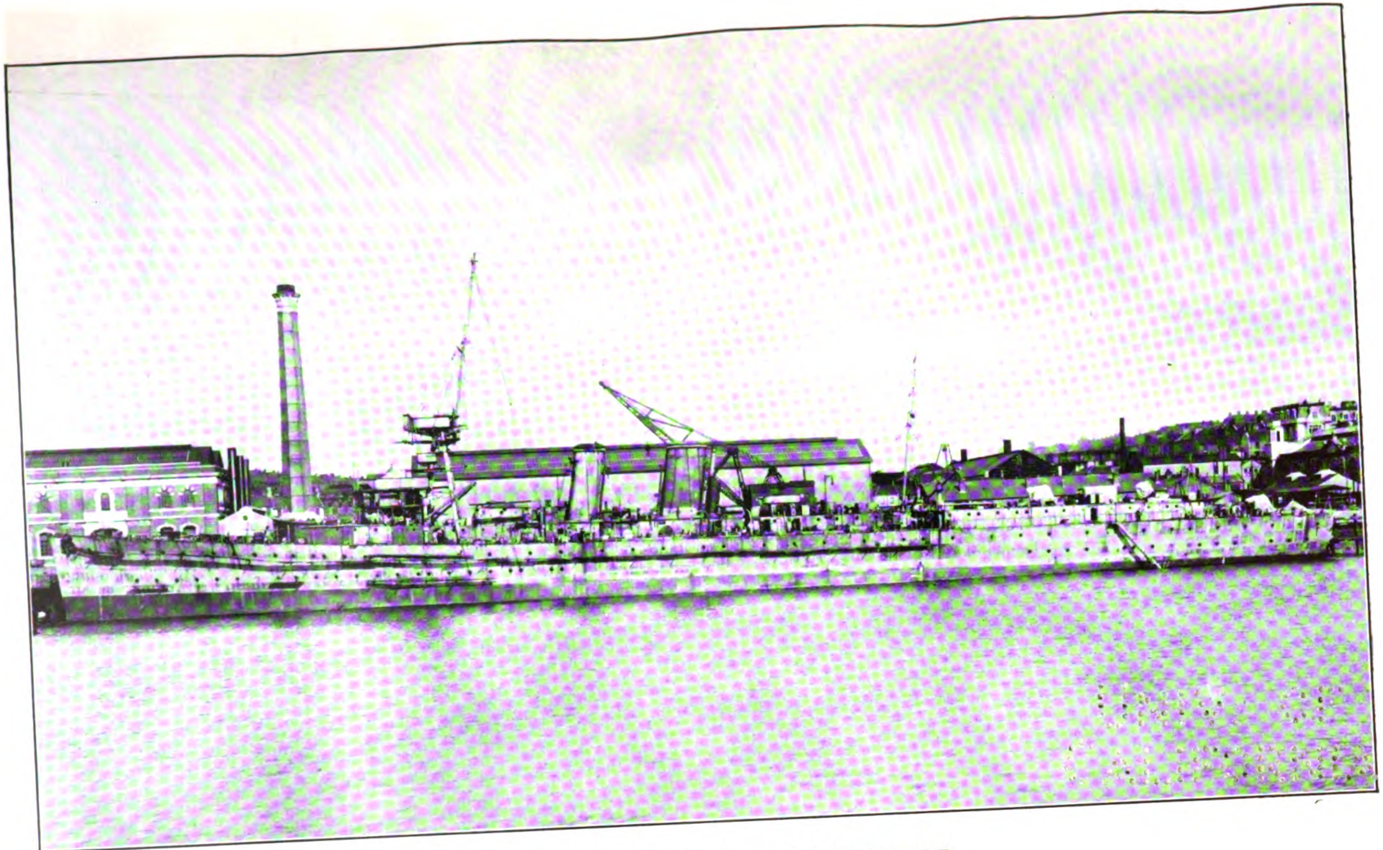
The controversy of earlier years since the Armistice as to the need for and the value of ships of the largest class has practically ceased, and nothing has occurred during the past year to question the wisdom of the Admiralty of 1922 in laying down vessels of the design of the Nelson and Rodney. The Third Sea Lord and Controller, Rear-Admiral Sir Alfred Chatfield, referred to the matter in a speech at the launch of the Cumberland by Messrs. Vickers. He quoted a statement that such cruisers as this were quite big enough for anything. Why, therefore, go in for larger vessels and build

such ships as the Nelson and Rodney? Why should not the 10,000-ton ship be the capital ship in future? The reply of Rear-Admiral Chatfield is as follows:

This is a very plausible argument, frequently used in the Press and other places, but why does the sailor ask for larger ships which cost so much money with the country in its impoverished state? There must be a reason for this, and the many distinguished officers of friendly countries whom we have here to-day will know full well what the answer is. If the seas are to be ruled by navies, we must have vessels that can withstand modern weapons. Until modern weapons are limited in the same way that the Cumberland has been limited, you must produce ships of a sufficient size to withstand these weapons. As long as you take your ships to sea in minestrewn waters, where the size of the mine is unlimited, so long must you have good under-water protection to meet that. So long as aircraft and the bombs they carry are unlimited in size, so long must you protect your ships with armour that can withstand that menace. So long as submarines can carry an enormous explosive charge, so long must your ship be sturdy and strong to enable it to meet that menace. There are many other reasons of a similar nature which I could give you, but do please tell those who always say how unnecessary, how wasteful, and how extravagant the Admiralties of the world are in building these large and cumbrous vessels, that there is an answer to that question, and impress upon them that it is the answer that is agreed to by every maritime country in the world.

The Cruiser Programme.

The cruisers of the Kent class, authorized in the Navy Estimates of 1924–25, when the Socialist Government was in office, were all launched in the spring of 1926. H.M.S. Suffolk took the water at Portsmouth on February 16, 1926, when the naming ceremony was performed by the Marchioness of Bristol, wife of Rear-Admiral the Marquess of Bristol, M.V.O. The event coincided with the presence at Portsmouth of the Admiralty Board, who were making their annual inspection, and the First Lord and Dame Bridgeman, the Second Sea Lord and Miss Brand, the Third Sea Lord and Lady Chatfield, the Fourth Sea Lord (Rear-Admiral Kelly), Lord Stanhope (Civil Lord), and Rear-Admiral Dreyer, A.C.N.S., were among those present. Three weeks later, Devonport Dockyard launched the Cornwall, when Lady Clinton acted as sponsor, on March 11. An interesting feature at this event was the broadcasting by wireless, for the first time on such an occasion, of the band music and religious ceremony, the smashing of the bottle of wine against the bows, and the cheers as the cruiser began to move down the slip-way. Five days later, on March 16, two cruisers were launched. At Chatham, the Kent was named by Lady Stanhope, wife of the Civil Lord of the Admiralty; and at Barrow-in-Furness, the Cumberland was launched at the Vickers yard, when the Dowager Countess of Carlisle performed the naming ceremony. Sir Trevor Dawson mentioned that Lady Carlisle launched the last Cumberland, on the Clyde, in 1902, and that her son, the present Lord Carlisle, was trained as a naval cadet in a ship launched by his mother. Finally, the Berwick was put afloat at the yard of the Fairfield Company, Govan, on March 30, when Lady Stirling Maxwell performed the naming ceremony. Details of these vessels as far as they have been revealed, will be found in the tables of ships. An indication of the advance in power and speed in the twenty odd years since the last County cruisers were built is afforded by the



H.M. CRUISER MINE-LAYER ADVENTURE.
(Constructed at Devonport Dockyard; engined by Vickers Limited.)

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fact that, on about the same displacement, the new vessels will have a broadside fire from their 8-inch guns of twice the amount of the old ships with their more numerous 6-inch weapons, while their rate of steaming will be at least 10 knots faster at sea. The five new Kents are due to be finished in the autumn of 1927.

An interesting fact about the Cumberland, mentioned by Commander Sir A. Trevor Dawson, Bt., R.N., at the launch on March 16, is that she is the only ship being constructed under the post-war programme for which the hull, machinery, guns, gun-mountings, and armour are being constructed by one firm. Between 80 and 85 per cent. of the total cost of such a cruiser is spent in wages alone, including, of course, the cost of getting coal, iron ore, etc.; and skilled workmen in numerous trades and over a wide area are maintained thereby at their particular industries. It was at the launch of the Cumberland, too, that Rear-Admiral Sir Alfred Chatfield said:

> The Cumberland is, as you know, of 10,000 tons standard displacement. The only peculiarity about that measurement is that she is not 10,000 tons. I am not letting you into any secrets when I say she has a larger displacement, because the wise men of Washington decided that in the displacement of a ship the fuel carried should not be included, and so the Cumberland is somewhat larger, although I am not allowed to tell you by how many more tons. . . . The naval architect is very much in the position of Shylock in "The Merchant of Venice." If he makes the ship one ounce heavier than 10,000 tons, he stands to lose the reputation of his country and its international integrity; whereas, if he makes it one ounce less, the sailor says: "You have given up some small measure of fighting power." He is, indeed, between the devil and the deep sea.

The four cruisers of 1925–26 were divided equally between public and private yards. Portsmouth and Devonport each received orders to build one ship, and the keels of the London and the Devonshire were accordingly placed in position on February 22 and March 16 respectively, on the slips just vacated by the Suffolk and Cornwall. About the same time, contracts were placed for the construction of the other two vessels. One of these was ordered from R. and W. Hawthorn Leslie & Co., Ltd., Newcastle-on-Tyne, to be named the Sussex; and the other from William Beardmore & Co., Ltd., Dalmuir, to be named the Shropshire. This county had not previously given its name to a British man-of-war, but has other associations with the Navy, among which it may be mentioned that Admiral John Benbow was born at Shrewsbury. The present First Lord represents a Shropshire division in Parliament. Discussing the design of these cruisers, the "Shipbuilding and Shipping Record" says:

> All these vessels come, of course, under the restrictions as to displacement tonnage and calibre of guns laid down by the Washington Conference. They are, therefore, of 10,000 tons displacement, and the limit in the calibre of the guns is 8-inch. The designers, however, are free to adopt any number of guns, always provided that the Conference limit of displacement does not exceed 10,000 tons. The speed, of course, must always be an important factor. This involves the question of the weight of machinery. It is just probable that when fuller details are available it will be found that a higher steam pressure than in former ships has been adopted. Already with the destroyers the Admiralty have gone as far as 350 lb. per square inch, and if still higher or similar pressure is adopted in the later cruisers, the weight of machinery will be reduced, while, at the same time, the oil-fuel capacity can be made less, leaving

a margin as compared with the previous ships, if the radius of action is maintained as with the earlier cruisers. There is reason for such a development in view of Sir Charles Parson's decision to supply Yarrow boilers and Parsons turbines in a vessel for the Clyde services with a pressure of 550 lb. per square inch. The Admiralty, however, will act prudently in this matter and possibly refrain from going to anything like the same pressure as in this Clyde passenger steamer. They will, no doubt, watch with keen interest the results of the trials and experience in service of this new vessel.

The four Londons are the first war vessels for the Royal Navy for the design of which Mr. W. J. Berry, C.B., who succeeded to the office of Director of Naval Construction on January 1, 1924, is wholly responsible. The two dockyard-built vessels will be engined, the London by the Fairfield Shipbuilding and Engineering Co., Ltd., and the Devonshire by Vickers, Limited.

New Destroyers.

In common with other post-war vessels for the Royal Navy, the first destroyers to be put in hand since the conclusion of hostilities, the Ambuscade and Amazon, were delayed in construction. Authorized in the 1924–25 Estimates, these vessels were ordered from the Thornycroft and Yarrow firms respectively in June, 1924, and their keels were laid down about six months later. Originally, they were to be finished in April, 1926, but the date was postponed, first to June, then to later months. The Ambuscade began her trials on July 12, and is illustrated on the plate facing this page.

The Ambuscade was launched on the Clyde on January 14, 1926, and the launch of the Amazon at Southampton was to have taken place on the 16th, but the snow and frost on the ways prevented this, and several days elapsed before the vessel was put afloat. The design of the new Amazon indicates a considerable advance in all directions, embodying the experience gained during the war. Her propelling machinery consists of Brown-Curtis turbines, using superheated steam, with Parsons single-reduction gearing, and her boilers are of the latest water-tube type.

Gunboat Contracts.

Apart from the four cruisers of the London class, the only vessels included in the 1925–26 programme were four gunboats. Contracts for these were placed with Messrs. Yarrow & Co., Scotstoun, in January, 1926. A sum of £210,652 is allocated for their construction up to March 31, 1927, and they should be finished towards the end of that calendar year. These are the only gunboats built or building for the Royal Navy, apart from craft intended only for river service, the last of the type, the Dwarf and Thistle, completed in 1899, having been scrapped in 1925, when the Daffodil and Delphinium replaced them on the West Coast of Africa.

Submarine Progress.

After exhaustive trials extending over nearly two years, X.1, the first British post-war submarine, and the largest completed

H.M. TORPEDO BOAT DESTROYER AMBUSCADE.
(Built and engined by Yarrow & Co., Ltd.)

under-water craft in the world, became a fully commissioned ship, in the Fifth Flotilla, Portsmouth, on September 25, 1925. Arrangements were made to send her for a long cruise overseas, similar to that undertaken by K.26 which voyaged unaccompanied to Singapore and back. Under Commander P. E. Phillips, D.S.O., X.1 left Portsmouth on April 1, arriving at Gibraltar on the 6th. She left again on May 5th, arriving home on the 10th.

Submarine O.1, now renamed the Oberon, begun at Chatham in March, 1924, is smaller type X.1, her surface displacement being 1,345 tons, as against the 2,525 tons of the latter (see plate facing page 11). The date of completion is December 31, 1926. During 1926 the last of the submarines left over from war programmes, L.26 and L.27, were passed into service, L.27 being commissioned by Lieutenant-Commander John Drinkwater for service in the Fifth Flotilla as tender to the Dolphin on March 25; and L.26 following suit in October. The latter is illustrated on the plate facing page 8.

The cruiser minelayer Adventure, laid down at Devonport Dockyard in November, 1922, and launched on June 18, 1924, is due to enter service in February, 1927. This first vessel of a new category has a displacement of 6,740 tons, and is armed with four 4·7-inch, sixteen 3-pounder, and machine guns. Her main engines, built by Messrs. Vickers, are geared turbines of 40,000 horse-power, giving a designed speed of 27·75 knots, or a rate mid-way between the speed of a battle fleet and a cruiser squadron or destroyer flotilla.

Fleet Organization.

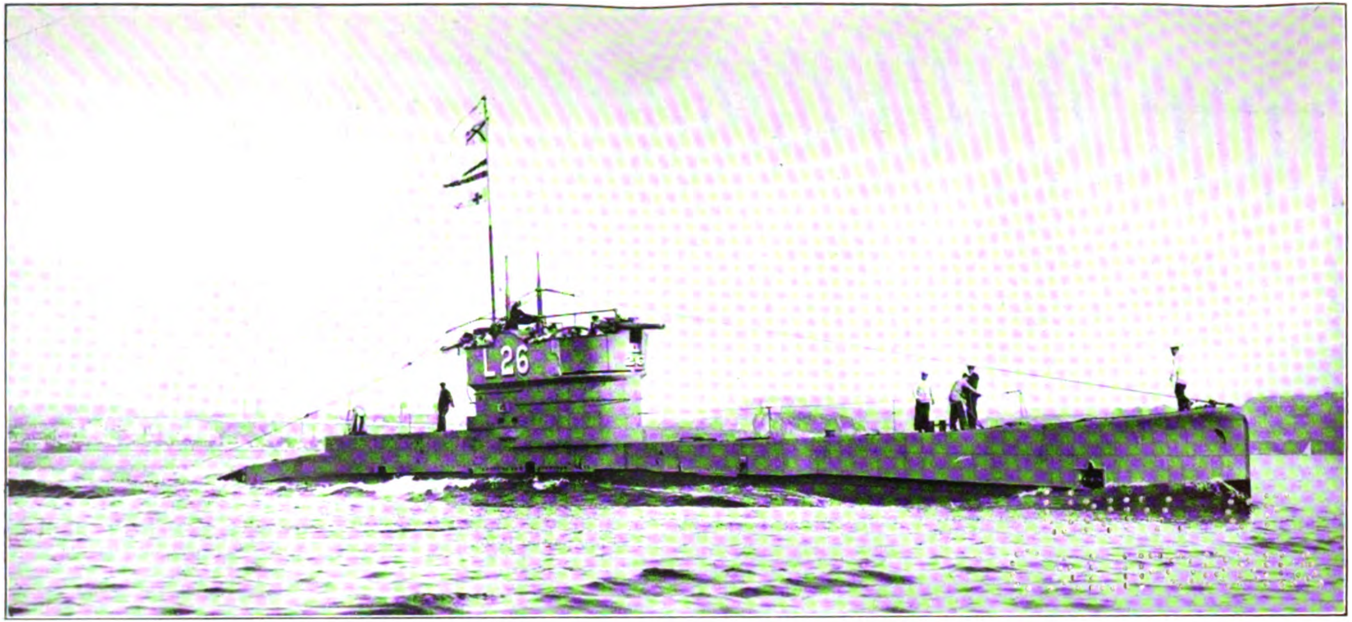
The changes made in the organization and distribution of the fleets and squadrons during the year have been those following the decisions made on the ground of economy in the autumn of 1925. Chief among them was the transfer of the Third Battle Squadron, composed of four ships of the Iron Duke class, from the Mediterranean to the Atlantic Fleet, to act as a training squadron for boys. This took place on March 9, 1926, and on the same day the Resolution and Royal Oak were transferred to the Mediterranean Fleet in place of them. In May, 1926, the Queen Elizabeth, being due for a lengthy refit, concluded a period of nearly ten years as flagship of the principal Fleet of the Navy, and the Warspite was brought forward in her place. On April 6, owing to the selection of the battleship Centurion for conversion into a target-ship to take the place of the Agamemnon, the Vice-Admiral Commanding Reserve Fleet, with his staff and retinue, were transferred from her to the Greenwich, as a temporary measure, until the cruiser Weymouth was ready for duty as flagship. The Centurion paid off into dockyard control at Chatham for conversion on April 14. On August 30, the Ajax was replaced as parent ship at the Nore by a cruiser, the Canterbury.

Among the cruisers of the Navy, the only change affecting total numbers was the reduction of the Second Cruiser Squadron, Atlantic Fleet, by one vessel, the Calliope, this being now a four-ship squadron. The completion of the Effingham, Emerald and Enterprise enabled a series of changes to be made on foreign stations, the effect of which

was to lower the average age of the cruisers there, and to provide a faster and more powerful squadron in the East Indies. The Effingham replaced the Chatham, which was placed on the sale list. The Emerald replaced the Colombo, which returned to Chatham, embarked there the crew of the Constance, and relieved the latter on the North American Station, the Constance being taken in hand for large repairs. The Enterprise, after being attached to the Atlantic Fleet for three months' special trials, took the place of the Cairo in the East Indies, and the latter returned to Devonport, was refitted there, and then went to the North American Station to relieve the Curlew, which was reduced to reserve at Portsmouth. The cruiser Conquest, parent ship of the First Submarine Flotilla, Atlantic Fleet, was reduced to a three-fifths' complement at the end of December, 1925.

Another part of the economy programme was the reduction of one flotilla from the Atlantic Fleet. The force selected was the Seventh Flotilla, which was reduced from full commission to reserve at Rosyth, taking over the duties there of the Ninth Flotilla, which was disbanded, the vessels of the latter, headed by the Shakespeare, returning to their respective home ports. It is interesting to note the difference in cost per annum of the three different categories of maintenance of destroyers other than in full commission. A destroyer of the "S" type costs approximately £7,600 per annum when in the Reserve Fleet; if paid off into Material Reserve, with a view to possible re-commissioning, the charges are about £1,300; and if paid off into the care of a ship-keeper, with a view to scrapping, £140. It is therefore possible to keep six destroyers in Material Reserve for the cost of maintaining one in the Reserve Fleet. There are, of course, other considerations to be borne in mind, one being the utility of the destroyers in reserve to accommodate and train young officers and men. For some time past, a large number of young seamen have been in training in the barracks at Port Edgar, with occasional trips to sea in the destroyers stationed there. An economy in the manning of the flotilla in Irish waters was effected by January 16, 1926, the Seawolf, Scythe and Sesame being reduced from full crews to three-fifths' complement, with the exception of their telegraphist and engine-room ratings, which remained as before.

The past year has seen the disappearance from active service of most of the destroyer depôt ships. The Admiralty decided that the flotillas must in future rely upon the dockyards direct for repair facilities, and that no new destroyer depôt ship or destroyer repair ship should be laid down, as had been proposed under the Amery programme of 1923. The new arrangements also provided that relief parties and spare crews were to be abolished, a corresponding reduction in accountant staff being made possible. So far as the Home Commands, Reserve Fleet, were concerned, the new policy involved the paying off for sale of the Dido, Hecla and Woolwich, at Portsmouth, Chatham, and Devonport respectively, the Captains (D) of the Reserve Fleet Flotillas transferring to the flotilla leaders Spenser, Malcolm and Douglas. The Diligence was withdrawn from the Atlantic Fleet, and paid off into dockyard control at Devonport on



(*From Photo by Topical Press.*)

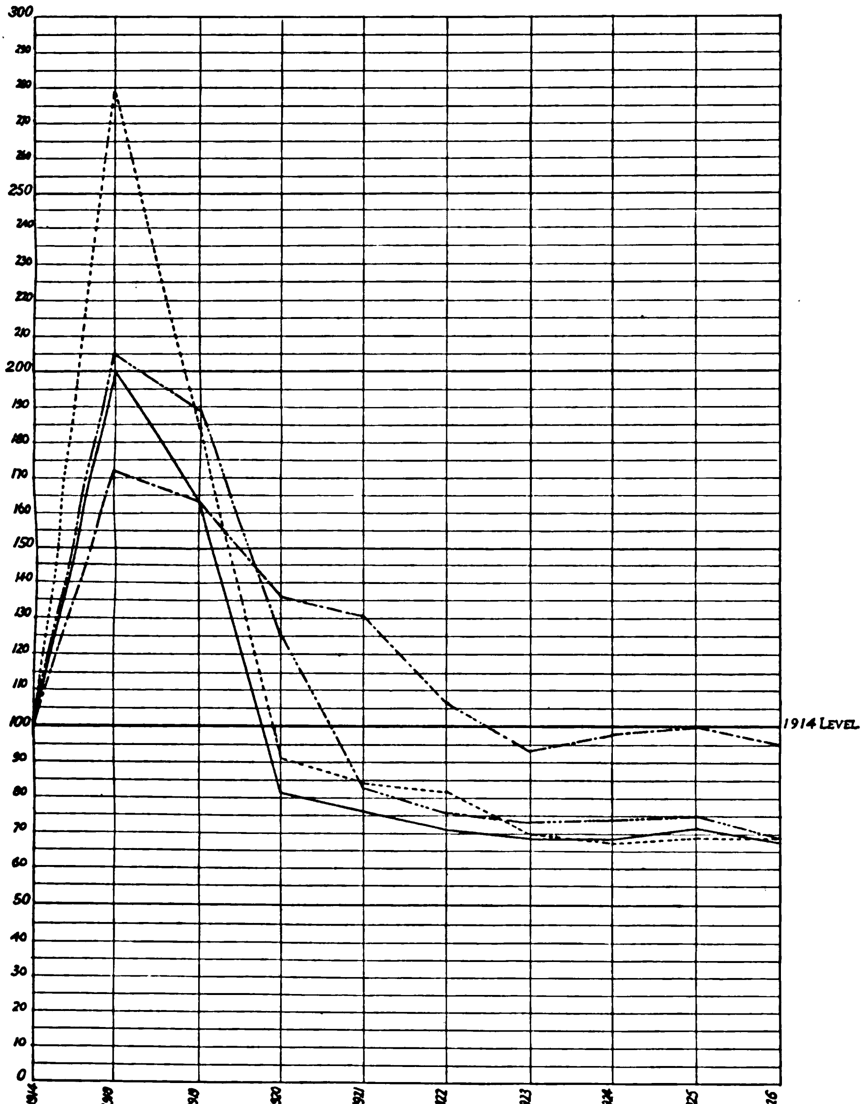
H.M. SUBMARINE L 26.

(*Built by Vickers, Ltd., and completed at Portsmouth and Devonport Dockyards.*)

COMPARISON OF THE TOTAL NUMBERS OF H.M. SHIPS, NAVAL PERSONNEL AND DOCKYARD WORKPEOPLE DURING THE YEARS 1914 AND 1918 TO 1926.

REFERENCE.

——— *Ships in Commission.*
—..—... *Ships in Commission and Paid Off.*
.... *Naval Personnel.*
—.—.— *Dockyard Workpeople.*



NOTES.

Numbers in 1914 = 100.

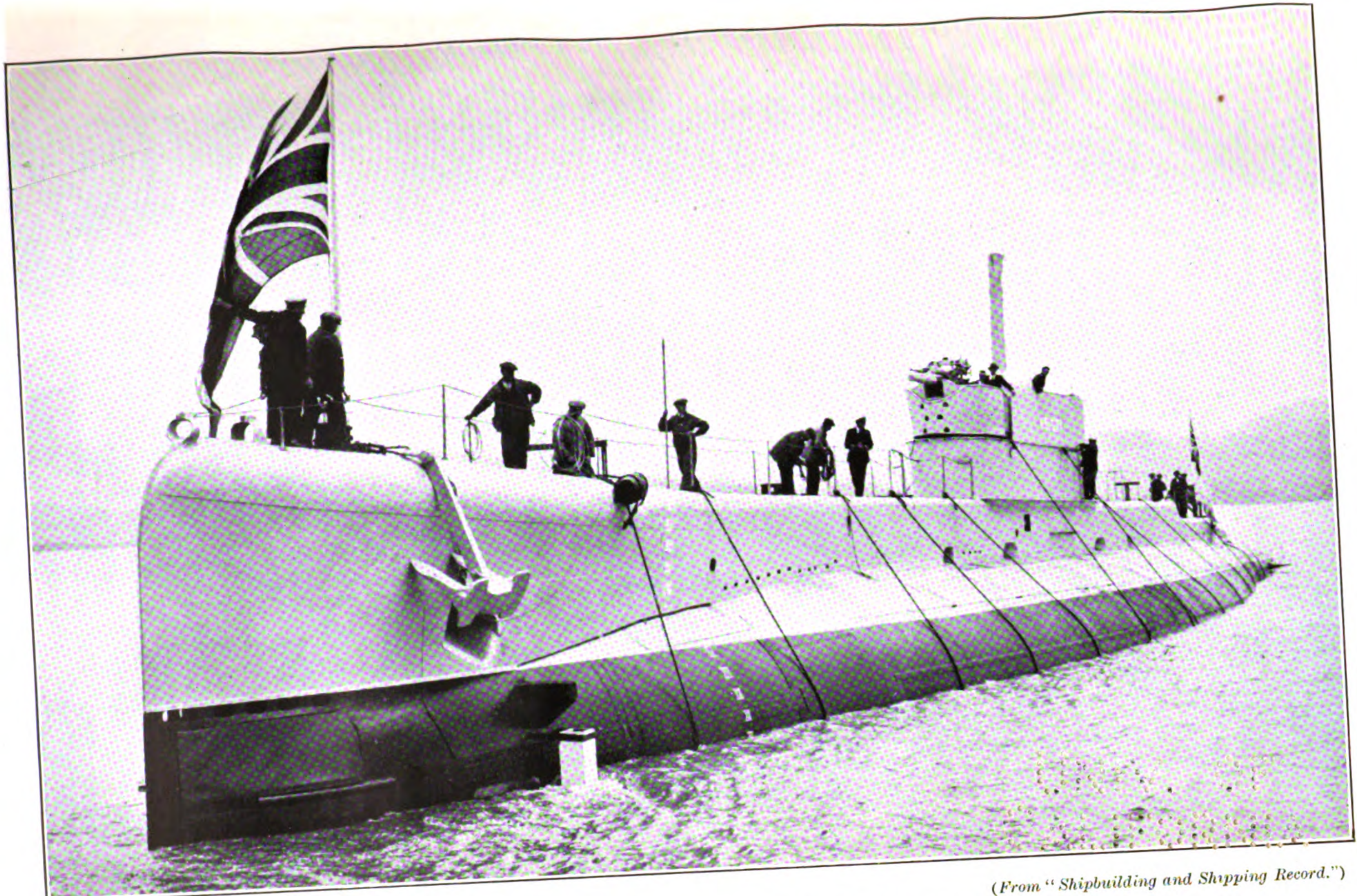
Numbers of H.M.Ships:——— *Stationary Ships, Motor Launches, Coastal Motor Boats, Surveying Vessels, Particular Service Vessels, Yachts, Tugs, Trawlers, Drifters &c are not included.*

January 16, 1926. In the Mediterranean, the work of the Greenwich and Sandhurst was combined in one ship, the Sandhurst remaining on the station, and the Greenwich being withdrawn to reserve at Portsmouth. Another depôt ship scrapped was the Blenheim, from the Central Reserve of Minesweepers at Sheerness, on which duty the old and small aircraft carrier Ark Royal replaced her.

Among the vessels removed from the effective list during the past year are the Chatham, Dublin and Southampton, and about forty destroyers. From August, 1925, no destroyers of the "R" class were taken in hand by the dockyards for any purpose, pending instructions, and on September 10, 1925, the Admiralty ordered that the flotilla leader Nimrod and 17 destroyers were to be placed on the sale list forthwith. A few weeks later, 15 more destroyers were ear-marked for scrapping in 1926. Another minor economy which may be recorded here was the closing down of the coastal motor-boat base at Haslar, its parent ship, H.M.S. Hornet, being paid off on March 31, 1926. This base had been at Portsmouth for over four years, when it was transferred from Osea, its base during the later stages of the war. The C.M.B.'s are now attached to the Vernon.

In various minor ways, the Navy has responded loyally to the call of the Government to save money, and has cheerfully accepted inconvenience and discomfort in view of the over-riding call for national economy. Crews of harbour craft, for instance, and tenders to the instructional establishments, have been called upon for extra work by a reduction in the numbers of these vessels and the pooling of those remaining. Consequent on the reduction of the number of destroyers and sloops attached to the various establishments at Portsmouth, commanding officers were ordered by the Commander-in-Chief to assist other establishments from time to time in order to facilitate, as far as possible, the execution of the various instructional and experimental programmes. The Captain (D) was authorized to detail any suitable available tenders in port for the service required. Another indication of the care taken to avoid expenditure was afforded by the placing in commission of the minesweeping trawlers Boyne and Cherwell for the training of Royal Naval Reserve *personnel* in peace, on the understanding that the necessary ratings required for the crews of these two vessels were provided from the First Minesweeping Flotilla, and that the fuel for them was met from the annual provision for vessels under the command of the Captain (A. P.). To do this, one of the twin-screw minesweepers of the First Flotilla had to be reduced to special complement, completing to full crew from depôt reserves only for cruises with the Fleet or overseas. The Captain (A. P.) also undertook, as a set-off to the expenditure involved in this very necessary scheme for training the naval reservists in the handling of minesweeping gear, to effect a saving of about 500 tons of coal per annum out of the annual provision for the Fishery Protection Flotilla and First Minesweeping Flotilla.

Two of the Navy's river flotillas, on the Rhine and Danube respectively, have been withdrawn during the past year. The Rhine Flotilla, when it was sent into Germany at the end of 1918, consisted of twelve units, but for some time only five motor launches



(From "Shipbuilding and Shipping Record.")

H.M. SUBMARINE OBERON, BUILT AT CHATHAM DOCKYARD.

had been maintained at Cologne, Nos. 291, the senior officer's boat, and Nos. 8, 287, 463, and 542. Commanders the Hon. Patrick Acheson, A. R. A. Macdonald, G. C. Wynter, and P. G. Wodehouse were the commanding officers of this little force during the 7½ years in which it assisted to carry out the terms of the Peace Treaty, and upheld the prestige of the Royal Navy, on the principal waterway of our late enemies. The Flotilla left for Portsmouth on January 21, 1926, travelling via the canals, and reached home on February 28, after an adventurous dash across the channel in which one of the boats, No. 287, was sunk in the rough weather prevailing, fortunately without loss of life. On the completion of the court of inquiry into the mishap, the launches of the Flotilla were ordered to be placed on the disposal list, and reduced to a care and maintenance basis, pending sale. These four survivors were the only vessels of their one-time numerous type in the Navy. The Flotilla on the Danube, as originally constituted after the armistice, included the gunboats Glowworm, Aphis and Ladybird. The two last-named were withdrawn and paid off in charge of a care and maintenance party at Malta in 1921–22, but the Glowworm carried on as the ship of the Senior Officer (Captain Douglas B. Le Mottee), until towards the end of 1925, when she too was paid off into the charge of the civilian care and maintenance party in charge of her sister-ships.

Promotion and Prospects.

Viewed in comparison with other years since the armistice, or with the last pre-war year, the outstanding feature of the executive officers' lists is the increase in the number of lieutenant-commanders. The following table shows the strength in the summer of 1926, in the spring of 1922 (before the great retirement scheme was inaugurated), and the spring of 1914 respectively :—

Rank.	July, 1926.	April, 1922.	April, 1914.
Captains	243	355	283
Commanders	400	555	419
Lieutenant-Commanders	915	615	710
Lieutenants	1198	1779	1205
Totals	2756	3304	2617

There is a decline, it will be seen, in each rank except of lieutenant-commander, in which 300 more officers are borne than in 1922, and 200 more than in 1914. The 1922 retirement scheme did not touch the lieutenant-commanders, nor lieutenants over four years' seniority. Thus, while it did remove some 400 lieutenants under four years, it left the great bulk of those above this seniority to remain on, and by becoming lieutenant-commanders in eight years, to accentuate the competition, already severe, for advancement beyond that grade.

In connection with this, two alterations in the zone of promotion from lieutenant-commander to commander have been made since the last issue of the " Annual " was published. For the December, 1925, selections, the zone was from 3 to 6¼ years' seniority on the date of selection, instead of from 3 to 6½ years; and for the June, 1926,

selections, it was from 2½ to 6 years. There was a similar movement lower down the list of the zone of commanders for advancement to captain. For the December, 1925, selections this extended from 5½ to 8 years as commander, but in June, 1926, it was altered to 5 to 7½ years. There is no sign of any lessening in the competition within the zones, so far as the number of candidates is concerned, and the feature of the promotions on June 30, 1926, was the high standing of the majority of the fortunate officers in their respective zones. Out of 145 commanders in the zone for captain, the ten selections were made from the 69 in the upper half; and out of 313 lieutenant-commanders in the zone for commander, selections were restricted to the top 63 places. Seven of the ten new captains, and twelve of the twenty commanders, were in the zones for the last time.

Lower Deck Promotion.

This matter is of special interest to the officers who have reached lieutenant-commander's rank via the grade of mate. In reply to a question on April 14, 1926, Mr. Davidson, the Parliamentary Secretary, stated that 32 of these officers would enter the zone of promotion to commander during the next two years, assuming that the lower limit of seniority remained unchanged. Owing to the late age at which these officers got their commissions, the retiring age limit of 45 will overtake most of them before they reach a position in the zone corresponding to that referred to. Since 1920, of course, conditions for the ex-mates have been improved by the selection of candidates at the age of 21, which has removed a great drawback. Discussing the prospects of the earlier ex-mates the "Naval Warrant Officers' Journal" said in July, 1926:

> What is it, then, that bolts and bars the door against the lower deck man rising to the top of the tree? It is not class distinction, for the Navy was never more democratic than it is to-day. No, it is the fact that the budding mate or accelerated promotion candidate is handicapped by having more years on his shoulders than his contemporary advancing through another channel. By the time he arrives at the promotion zone, age has robbed him, not of zeal, but of opportunity, and should one manage to slip through, unless four stripes followed brass hat pretty rapidly, retiring age would arrive before the top of the list was reached. So, although it is possible to reach the highest rank, it is highly improbable.

Attention was drawn by the Admiralty in a fleet order to the fact that lieutenants, R.N., promoted from mate, are eligible to specialize under the same conditions as other lieutenants. Their lordships observed that up to the present very few requests have been received, and they wish it to be clearly understood that any applications from these officers will be given every consideration when selections for specialist courses are made. It appears that while over 370 mates had been promoted to lieutenant, only one—apart from the ex-mates (W/T), a rank now extinct—had been allowed to specialize, a navigating officer in the hydrographic branch. In 1926, the first ex-mate passed the staff course.

For the first time, the Admiralty have published during the past year the limits of the promotion zones for the half-yearly advance-

ments of commanders in the medical and accountant branches. Surgeon-commanders must be of eight years' seniority and over on the date of selection; and paymaster-commanders of 12 years' seniority and over on the date of selection. For the half-yearly promotions on June 30, 1926, when there were five advancements to surgeon-captain, 79 surgeon-commanders on the list had over eight years' seniority; and among the accountant officers, of whom one was advanced to paymaster-captain, there were 22 with more than twelve years' seniority.

After an interval of over seven years, the last appointments having been made on October 11, 1918, or a month before the armistice, promotion to the rank of boatswain, R.N., was resumed on January 1, 1926, when six candidates were promoted. A fleet order has been published reducing the qualifying course for this rank from 65 to 15 days in gunnery, and from 25 to 10 days in torpedo.

The Chelmsford Committee.

On December 8, 1925, the Admiralty announced the appointment of a committee to investigate and report upon the policy to be pursued in future as to the list of executive officers of the Royal Navy. Lord Chelmsford, late First Lord, was appointed Chairman, and the other members were Admiral of the Fleet Sir Charles Madden, Rear-Admiral H. W. Parker, Captain R. C. Dalglish, Sir Warren Fisher (representing the Treasury), and Sir Charles Walker, Deputy Secretary of the Admiralty, with Mr. H. V. Markham, of the Commission and Warrant Branch, as Secretary. It is necessary to appoint such a committee periodically to consider the condition of the executive lists from the point of view of ensuring a regular flow of promotion through all ranks, and the Chelmsford Committee was the third of a series. The first was presided over in 1894 by Admiral Sir Anthony Hoskins, and the second in 1902 by Viscount Goschen. The committee under Lord Chelmsford would, in normal circumstances, have been set up some years before, but owing to the war and the abnormal state of the lists resulting therefrom it was postponed until more settled conditions had been reached.

Entry and Training.

From 45 to 50 cadets were entered at Dartmouth in each of the three terms during 1926, or about the same number as in recent years. On the other hand, the number of executive cadetships offered by the special entry system was reduced from 20 in June, 1925, to 15 in November, 1925, and again to 10 in June, 1926. The relative merits of the two schemes of entry continue to be discussed, but as Lieutenant-Commander W. S. Galpin, R.N., who has made a special study of the subject, has pointed out, it is probably a sound plan to keep going both the Dartmouth and public school methods of entry. The special entry method, he declares, is far more economical, possesses the great advantage of being capable of rapid expansion when necessary, as on the outbreak of war, and at the same time permits the entry of boys who at the earlier age were, perhaps, unfitted

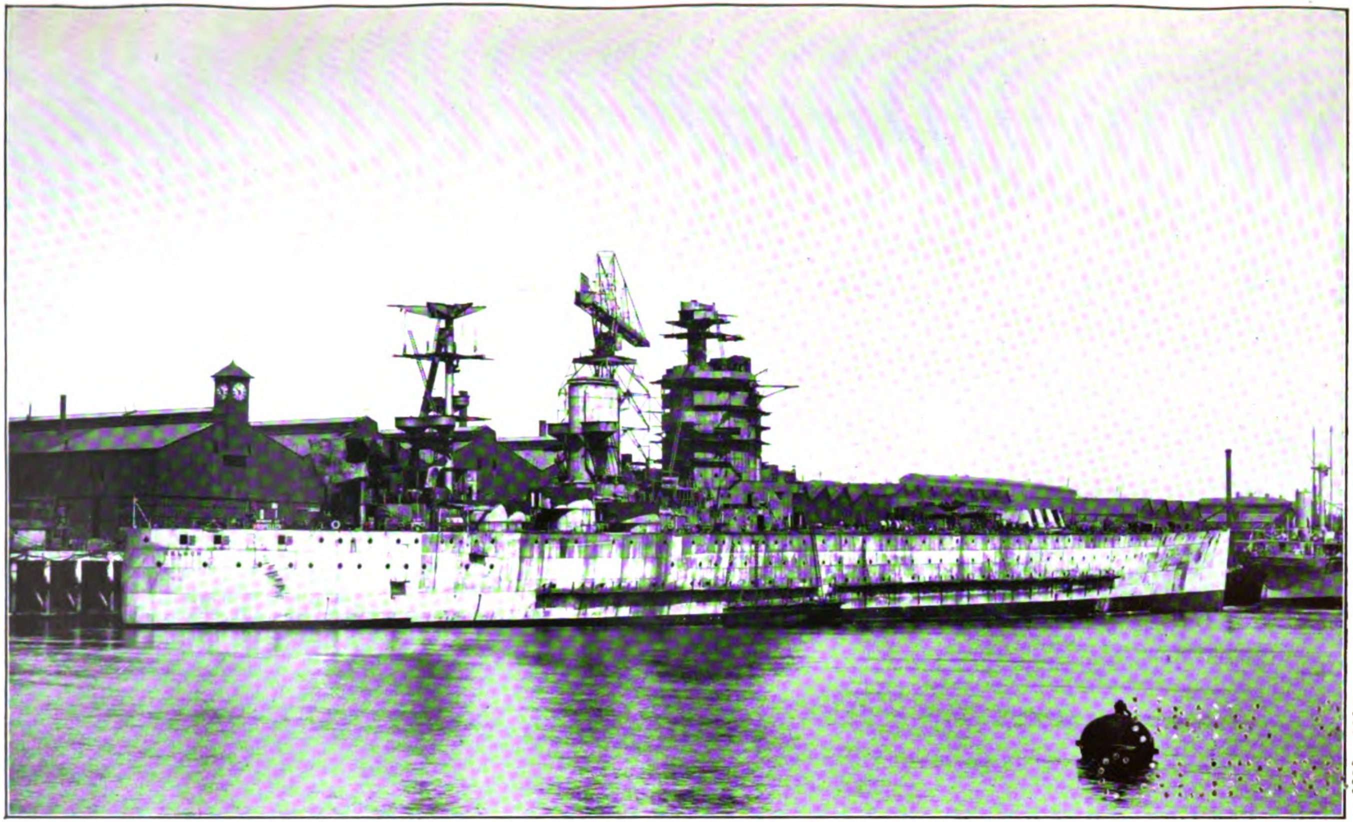
by health or other reasons to join the Navy, and who would otherwise be lost to the Service. At the same time, it is well that the preparatory schools should continue to have the opportunity to send boys into the Navy, which they can only do if the age of entry coincides approximately with their age for leaving. An interesting change made about three years ago is that in respect of cadets accepted from the mercantile training ships Conway and Worcester and the Nautical College, Pangbourne. Whereas these were taken between the ages of 14 years 8 months and 15 years, and sent to the Royal Naval College, Dartmouth, joining about midway through the course of the other cadets there, they are now taken between the ages of 16 years 8 months, *i.e.*, two years older, and go direct to a ship in the Reserve Fleet for a year's training, coming under the same regulations as the special entry cadets.

The battleship Thunderer, being marked down for scrapping under the Washington Treaty, was paid off on August 30, 1926, from duty as parent ship of the Reserve Fleet, Devonport, and training ship for special entry and paymaster cadets. The monitor Erebus, one of the principal ships of the Dover Patrol during the war, was fitted out for duty in her place. A revised syllabus for the training of paymaster cadets, of whom there are two entries annually, on January 15 and September 15, following examinations in November and June respectively, shows that the approved course of instruction is divided into two periods of about 13 weeks each. The first period is mainly theoretical; the second practical, supplemented by theory, the accountant work of the ship being carried out, as far as circumstances permit, under supervision. Concurrently, paymaster cadets receive disciplinary and other training to familiarize them with the Service, its customs, and the working of one of H.M. ships.

Short Service Scheme Revived.

The re-introduction of short service for seamen in the Royal Navy was announced by the First Lord in his memorandum accompanying the Navy Estimates, 1926–27, and recruiting began on April 1, 1926. The periods of service in the active Fleet and in Reserve are the reverse of those in force before the war, *i.e.*, seven in the Fleet and five in Reserve. The men join as ordinary seamen, receiving the same rate of pay as long service men (2*s.* a day), but on advancement to A.B. and leading seamen (the highest rate to which N.C.S. men may rise) they receive the lower rates previously approved for non-continuous service men, which are 6*d.* a day less. Seamen who join for short service may be transferred to continuous service by order of their Commander-in-Chief. They must have served for two years, have passed for A.B., and have been recommended by their Captain as deserving in all respects and likely to make good petty officers or to hold a higher specialist rating.

Time has indeed brought its revenge in regard to the short service system. When first introduced over twenty years ago by Lord Fisher it had a mixed reception. The derison with which "Selborne's Light Horse" were regarded in certain quarters will be



(From a photo by W. Parry & Son.)

H.M. BATTLESHIP NELSON.

(Building by Sir W. G. Armstrong, Whitworth & Co., Ltd.; engines by the Wallsend Slipway and Engineering Co., Ltd.)

recalled, and at least one distinguished Admiral was reported to have declared that, if he was in command when war broke out, he would promptly land all his short-service men before going to sea. Yet the system more than vindicated the purpose of its originators. It not only provided a class of "sea labourers" who were quite well able to perform the duties expected of them, and at less cost to the State, but it also served to build up the magnificent Royal Fleet Reserve by means of which the Admiralty were able to send to sea every ship when war came, besides leaving over a surplus for contingencies and to assist in forming the Royal Naval Division.

Other changes in regard to the training of men include the provision of a new establishment for boys and young seamen at Forton, Gosport, in what was formerly the headquarters of the Portsmouth Division of the R.M.L.I. This will supplement, and not replace, the existing establishments, and is expected to enable the Admiralty to avoid the necessity of sending batches of seamen to Port Edgar for training in the barracks and destroyer flotillas at that base. The cost of the conversion of Forton was estimated in the current Navy Estimates at £158,200.

Pay, Pensions and Allowances.

Chief among the alterations of pay since the last issue of the "Annual" is the adoption of a lower scale for officers and men entering after October 3, 1925. The cuts made in the pay of the men affected all grades from ordinary seaman to chief petty officer, and from marine to sergeant in the Royal Marines. They varied from as much as 25 per cent. in the lower grades of less skilled men and boys, to 10 per cent., or less, in the higher technical grades, the great majority of the ratings being given 1*s.* a day less. This was the first alteration in the pay of the lower deck since the Jerram Committee scales were adopted in the spring of 1919, although various allowances had been reduced or abolished. The cuts were by no means generally approved by the country; on the contrary, they were regarded by many as injudicious and inopportune. It was felt that the contentment and therefore the efficiency of the Navy had been largely enhanced by the work of Admiral Jerram and his colleagues in 1919, and that no mere cheeseparing effort should be allowed to interfere with the goodwill thus created. As the men had been given to understand that the Jerram rates were permanent, no alterations were made in the scales for those already in the Service. The new order provided that men serving would continue to be paid at existing rates, but some apprehension was aroused by a statement that "It must, however, be clearly understood that men are not entitled to claim a right to any rate of pay or other emolument under existing scales in the event of reduced scales being introduced." But in reply to a question on the subject, Mr. Davidson announced in Parliament that "The meaning is that, notwithstanding the general principle referred to in the Fleet Order promulgating reduced rates of pay for new entrants, this reduction will not be applied to men serving on the date of the introduction of the new scales."

More surprising was the inclusion of certain of the junior grades of officers among the list to which cuts were applied, as regards new entrants, after October 4. The pay of cadets and midshipmen, and officers of or above the relative rank of lieutenant-commander, R.N., or captain, R.M., was not affected, but the pay of acting sub-lieutenants was reduced from 8*s*. 6*d*. to 8*s*. per day; that of sub-lieutenants from 10*s*. to 9*s*. 6*d*.; mates from 14*s*. to 13*s*. 2*d*.; lieutenants on promotion from 15*s*. to 14*s*. 2*d*.; lieutenants after four years from 17*s*. to 16*s*.; and lieutenants after six years from 20*s*. to 18*s*. 10*d*. Corresponding reductions were made in the engineer, accountant, and other branches. The revised rates of pay are subject to revision, like those for the bulk of officers, on July 1, 1927, and triennially afterwards.

Fleet orders on December 11, 1925, shed light upon a subject of much interest to all naval and marine officers, but about which little was formerly known. This was the basis on which the triennial revisions of pay, according to the cost of living, are made in officers' pay. The basis is a comparison between (*a*) the increased cost of living in July, 1919 (with reference to which the standard rates of pay were fixed), as represented by the figure 107½, this being the mean of the increase of cost-of-living figures for that month (105–110) published by the Ministry of Labour; and (*b*) the average of the corresponding index figures for the six months ending on December 31 preceding the date on which the revision is due to be made. The detachable portion (20 per cent.) of the standard rates affected will be increased or decreased accordingly, the resultant rates being "rounded" for the purpose of avoiding the payment of fractional amounts.

Other changes of the year in regard to pay and allowances need only brief mention. It was announced in April that lodging and subsistence allowances are now payable to officers and men promoted at the rates appertaining to the higher rank or rating as from the date on which they draw the full pay of that rank or rating, or the date on which they receive official notification of promotion, whichever is the later. Antedating of promotion does not carry with it antedating of the allowances at the higher rates.

No more has been heard of the question of marriage allowance for naval officers, the shelving of which, after money had been actually voted for it, was discussed in the "Annual" last year. The marriage allowances for ratings were reduced for the financial year beginning on April 1, 1926, to the rates shown in column 70 of the official scale, instead of those in the column headed 80, as formerly. The scale, is graded to every ten points, and the reduction was made because the cost of living index figure of the Ministry of Labour had dropped from 80 on January 1, 1925, to 75 on January 1, 1926. The change meant a reduction of from 6*d*. to 2*s*. weekly in the cases of men with families.

From April 1, 1926, also, the rates of provision allowance for naval officers were reduced from 3*s*. 6*d*. to 3*s*. 5*d*. a day, or from £56 10*s*. to £55 a year. For men, including long leave allowance, the rates were reduced from 2*s*. 8*d*. to 2*s*. 7*d*. a day. These allowances are reviewed half-yearly in relation to the current prices of food stuffs.

A revised price list of government provisions issued on repayment, and expended for general mess purposes, from April 1, 1926, showed decreases of ¼d. or ½d. per lb. in the cost of chocolate, coffee, pickles, and tea ; but increases in marrowfat peas, raisins, rice, tinned suet, and meat and vegetable rations.

Uniform Clothing and Victualling.

The purple stripe, which has figured largely in naval discussions, is referred to on page 30 in connection with the controversy on the status of the engineer officers. Other orders in regard to uniform evoked less interest. From July 1, 1926, the waterproof coat became compulsory for all ratings. The overcoat remained optional, but is included in the free kit given to new entries, as formerly. The regulation type of waterproof coat for C.P.O.'s and other men not dressed as seamen is the blue mackintosh. For those dressed as seamen, the regulation type will be the oilskin, either Pegamoid or ordinary pattern, but no further supplies of the former are to be purchased when present stocks are exhausted. Another fleet order placed the comforter and the duck cap cover in the optional instead of the compulsory kit for active service ratings dressed as seamen. Modifications of clothing in submarines included the provision of two blue overall suits in the compulsory kit for all ratings—seamen and stokers—in class II. uniform, serving in underwater craft at home. The loan issue of one blue overall suit allowed to seamen ratings in submarines was extended to stoker ratings.

In regard to the use of white clothing for ratings, it is now provided that, in the event of a ship recommissioning for further service abroad, ratings not dressed as seamen who remain from the previous commission, and who received a gratuitous issue of white clothing in that commission, may receive a further gratuitous issue, on the scale authorized in the uniform regulations, when they have completed 2½ years' service at the station, and provided that they are likely to remain abroad for a further period of about twelve months.

The Fleet Air Arm.

The First Lord in his notes accompanying the statement on the Navy Estimates was able to report steady progress in the use of aircraft by the Fleet. Two of the large aircraft-carriers, the Eagle and Hermes, have been employed throughout the year with the Mediterranean Fleet, and another, the Furious, with the Atlantic Fleet, in place of the Argus, which is undergoing large repairs at Chatham at a cost of well over a quarter of a million sterling. The Courageous and Glorious, which are under conversion to aircraft-carriers at Devonport, will not be finished before 1928.

An explanation was given by fleet order on June 4, 1926, of the meanings which are ordinarily to be assigned to certain expressions used officially regarding the designation of naval officers employed on air duties. The term " attached " means naval officers attached to the Royal Air Force for serving in the Fleet Air Arm under A.F.O.

1058/24. "Lent" means naval officers employed with the Royal Air Force under naval conditions as regards pay, rank, etc.; and "seconded" means naval officers serving in the Royal Air Force entirely under R.A.F. conditions.

Regulations governing the award of retired pay to officers of the Royal Navy or Royal Marines who are retired on account of sickness or injury, attributable to the conditions of the service, while attached to the R.A.F. for duty with the Fleet Air Arm, now provide that these officers shall be dealt with as under R.A.F. regulations appropriate to their rank, or under naval regulations, whichever would be more to their advantage. The same applies to an officer's widow or children in respect of their allowances.

Considerable variation is apparent in the numbers and types of anti-aircraft weapons mounted by the different Powers. Of the British aircraft-carriers, the Hermes, according to the official return of Fleets, has three 4-in. A.A. guns, the Argus four, the Eagle five, and the Furious six. Of the aircraft-carriers building or converting abroad, the French Bearn will have six 3·9-in. guns, the Japanese Akagi twelve 4·7-in., and the American Lexington and Saratoga, twelve 5-in. each.

The Vindictive, which has returned to sea service since the last issue of the "Annual," is now classified as a cruiser, having been re-converted. She has now no "landing-on" deck. She is, however, the first British seagoing ship to be fitted with a catapult for launching aircraft into flight. A brief announcement of this innovation was made by the First Lord in his memorandum accompanying the 1926–27 Estimates (see "Naval Reference Section"). As to this announcement, an aeronautical correspondent of the *Times* said:

> The Admiralty are still withholding any details of the apparatus used, but it can be stated that it was designed in co-operation with the Royal Air Force, and was actually made at the Royal Aircraft Establishment, Farnborough. The results obtained with this, the first of its type, are, it is understood, sufficiently satisfactory to justify further orders, and the vessel's departure to a far station with a catapult may be taken as an indication of success.
>
> So far as is known, only three nations have been seriously experimenting with catapults—Great Britain, America, and Italy. During the war, a catapult operated by compressed air was tried out at the Eastchurch station and some successful launches were made, but under conditions which could not be repeated probably at sea. The general principles of operation are the erection of a horizontal girder track at some convenient point on the forepart of the ship, along which a small trolley can be propelled. The aircraft to be launched—in the case of the British Navy Fairey III. D. seaplanes are used—is anchored on the trolley in such a way that it is held rigid until the actual moment when it is released, towards the end of the track. The engine of the seaplane is, of course, running, and the problem is to raise the speed of the aircraft from zero to, say, about 35 to 40 miles an hour within about 50 feet without detrimental effects to the pilot or the machine. It is not an easy matter thus literally to shoot a machine and pilot, weighing, perhaps, 3,000 lb. or more, into the air in safety.
>
> . . . Unfortunately, the further problem of getting aircraft back to a naval vessel still remains, for it must alight in the sea to be hoisted on board. This is a process which, if the vessel is rolling, is attended with great difficulties in avoiding damage to the comparatively frail machine.

Dockyard Policy.

Important changes have been made since the last issue of the "Annual" in the public dockyards. Chief among them is the

closing down of Rosyth and Pembroke. The buildings and plant at these establishments will, in future, be maintained in such a state as will enable the yards to be opened again in case of need. The decision to reduce them to a care and maintenance basis, first announced in September, 1925, naturally aroused local opposition. Protest meetings were held, and deputations waited upon the Admiralty, but the Government stood to its policy, and by the end of the financial year on March 31, 1926, only a few hundreds of workpeople remained to finish outstanding jobs.

The House of Commons debated the policy of closing the two yards on a motion moved from the Labour benches on December 11, 1925, that the decision "was taken without due regard to the Government's responsibilities to Parliament, to the municipalities concerned, and to the workmen affected." Replying to the criticisms made, Mr. Bridgeman, the First Lord, was able to show that in making these economies the Admiralty was but fulfilling the demand of the House to reduce expenditure. In pursuance of the promises which had won them assent to their replacement programme for cruisers and other craft, the Admiralty had been obliged to discharge 2,500 men. If they were to be asked to employ them, more money would be needed, irrespective of whether Pembroke and Rosyth were kept on or not. These dockyards had been chosen for closing because they were the most expensive, and because it would have cost £20,000,000 to equip Rosyth to take small ships. Strategic questions were irrelevant, because both could be at once reopened in time of war.

The House must not suppose, said Mr. Bridgeman, that this was the only economy that would be made. "The economies that were contemplated were very much larger ones, and would fall far more heavily on the people in England than on Scotland or Wales." This remark of the First Lord gave rise to a rumour that Chatham Dockyard would also be closed, but it was announced by the Parliamentary Secretary to the Admiralty that the immediate intention of the Admiralty was only to reduce Rosyth and Pembroke. It was anticipated, however, that further reductions in the amount of repair and construction work would take place gradually during the next two or three years, in which case it would be necessary to review the situation afresh.

Consequent on the reduction in the status of Rosyth, Vice-Admiral Sir Walter Cowan, on being appointed Commander-in-Chief on the North American Station, was succeeded on June 2, 1926, by Rear-Admiral H. W. Bowring, D.S.O., as "Rear-Admiral and Commanding Officer, Coast of Scotland," the title of Admiral-Superintendent, Rosyth Dockyard, being dropped. On the reduction of Pembroke to a care-and-maintenance basis on May 31, 1926, the appointment of Captain-Superintendent at this yard was terminated, and the yard passed under the charge of the former Chief Engineer. It was announced in September that Messrs. Thos. W. Ward, Ltd., of Sheffield, were leasing a portion of the yard for shipbreaking and engineering work.

Saving in Expenditure.

Although much was heard of the undoubted hardships of the closing down of Pembroke and Rosyth, the relative saving in expenditure was small. This, indeed, was one of the arguments in favour of the retention of the yards put forward by their local supporters. In regard to the saving on Navy votes, this was put by Mr. Bridgeman, in his speech on December 11, 1925, as over £1,000,000, of which £327,000 arises from the closing of the dockyards and the rest from the discharge of men. But much greater economies in proportion have been made upon the seagoing fleet and upon the officers and men required for service afloat. An important series of tables which has been prepared for this issue of the "Annual," and which will be found in the pages which follow, deserves special study in this connection. These tables show in an illuminating manner the extent to which the Navy has been cut down since 1918, and to a very much greater degree than the dockyards which supply the Navy's needs.

In table "AA," to be found on page 22, is a statement showing the ratio of the naval and dockyard *personnel* in 1926 to the strength in 1914. Taking the numbers in July, 1914, as 100, it will be seen from this table that the proportion of ships in April, 1926, had come down to 69, and the proportion of officers and men had been reduced to a similar figure. In the dockyards, on the other hand, the total of workpeople represented the high ratio of 95. Ships and seamen, that is to say, had been reduced by 31 per cent., and dockyard workmen by only 5 per cent., as compared with the pre-war totals.

The actual figures upon which these comparisons are based are set forth in a second table, "BB," to be found on page 23. We had 626 vessels in 1914, which had more than doubled (1,281) at the Armistice, but which in 1926 had come down to 435. Officers and men, who numbered 146,047 in 1914, and increased to 407,316 at the armistice, had been reduced in 1926 to 100,625. Yet in the dockyards, where the expansion was only from 53,550 in 1914 to 92,119 at the armistice, the numbers in 1926 were 50,898. Peacetime retrenchment has thus fallen six times as heavily on the sailors as on the workmen in the yards. Over 45,000 naval officers and men have been retrenched as compared with 1914, but only 2,600 dockyard workpeople.

Decline in Warship Strength.

Another table of the series, "CC" (pp. 24-25), requires more cautious handling as a basis for deductions, since the free use of mere totals of ships, irrespective of their class or condition, is apt to mislead. Yet what is shown beyond dispute is the decline in numbers of the ships which count for most in any comparison of fleet strength—battleships from 60 in 1914 to 18 in 1926; battle-cruisers from 8 to 4; cruisers from 100 to 42; destroyers from 211 to 157; submarines from 72 to 55, and so on. The decline in fighting power is much greater than the proportion of one-third

suggested by the aggregate totals. And a decline of such magnitude inevitably means a corresponding reduction in the amount of work for the public dockyards, which are not so much building as repairing establishments.

Yet in a fourth table, "DD" (page 26), it is shown that the reductions in the numbers of dockyard workpeople borne are very small. The three principal yards of Portsmouth, Devonport and Chatham employed between them 37,645 men in 1914. In 1926 they still had on their books a total of 34,596. The closing down of Pembroke had reduced the total there from 2,488 in 1914 to 706 in 1926, but as against this there were still 1,332 men employed at Rosyth, as against none in 1914, so that the net saving on these two yards was but 450. The year 1926 was the first since the war in which the total *personnel* of the dockyards fell below 40,000, although very little more than this total sufficed to maintain the much larger fleet maintained in service prior to 1914.

On the other hand, as will be seen from table "EE" on page 27, a cut of over 45,000, or one-third, was made during this period in the numbers of naval *personnel*. There was a slight rise from 99,326 in 1924 to 100,104 in 1925, and 100,625 in 1926, no doubt due to the Admiralty having undertaken provision for the Fleet Air Arm, but even with this, the reduction as compared with 1914 is startling. Alongside it, the failure to reduce dockyard staffs is incredible. A glance at the total of naval *personnel* for 1923 will show that the effect of the 1922 retrenchment scheme was to remove 19,028 officers and men from the Navy. During the same twelvemonth, discharges or removals from the dockyards totalled only 7,536. If a total of 53,550 workpeople, at home and abroad, sufficed for the public yards in 1914, then the standard of strength in 1926, measured in relation to the numbers of naval officers and men, should have been in the region of 36,894. On this showing, 14,000 workpeople could be discharged from the dockyards, and still leave the same proportion as in 1914 to attend to the needs of the Fleet.

It is instructive to set forth the comparative totals of the men in the various yards in 1914 and in 1926. They are shown in the table on page 28.

Outstanding features in this table are the discharges at Pembroke, from which more workpeople have been removed than from any other yard; and the increase at Malta, which is accounted for, of course, by the reinstatement of our naval power there following the conclusion of the war. Gibraltar, on the other hand, shows a decline of 37 per cent. in the strength of its working staff, and there is a slight diminution in the numbers employed at Hong Kong, in spite of numerical increase of the Squadron out there. But with these exceptions, all the other yards abroad employed more workers in 1926 than in 1914. The increase abroad, in fact, wipes out one-half of the decrease of 5,141 in the numbers of workpeople at the home yards.

TABLE "AA."—GREAT BRITAIN.

COMPARISON OF STRENGTH OF THE FLEET AND OF THE PERSONNEL OF THE ROYAL NAVY AND H.M. DOCKYARDS ON THE BASIS—JULY 1914 = 100.

(Ships and Personnel in the Services of Dominion Navies are *not* included.)

	Fleet Strength (excluding ships specified at *).				Naval Personnel.			Dockyard Workpeople.		
	Full Commission.	Special Reduced and Reserve Complements.	Ships in commission generally.	Ships in commission and paid off.	Officers.	Ratings.	Total.	Home yards.	Foreign yards.	Total.
July 1, 1914	100	100	100	100	100	100	100	100	100	100
November 11, 1918	396	2	200	205	328	275	279	162	222	172
April 1, 1919	236	90	163	189	271	177	184	156	202	163
April 1, 1920	88	73	81	126	123	89	91	134	149	136
April 1, 1921	81	71	76	83	104	83	84	132	127	131
April 1, 1922	73	69	71	76	103	82	83	106	118	108
April 1, 1923	69	69	69	73	86	69	70	90	114	94
April 1, 1924	70	68	69	74	82	67	68	94	116	98
April 1, 1925	73	72	72	75	84	67	69	94	130	100
April 1, 1926	69	67	68	69	83	68	69	89	128	95

COMPARISON OF NUMBERS OF THE PRINCIPAL TYPES OF SHIPS ON THE BASIS—JULY 1914=100.

	Numbers.	
	July 1, 1914.	April 1, 1926.
Battleships and Battle Cruisers	100	32
Cruisers	100	42
Flotilla Leaders and Destroyers and Torpedo Boats	100	54
Submarines	100	76

* *The calculation does not take into account the additional ships in commission referred to in the detailed statement of Fleet Strength, viz.*—

July 1, 1914	52	*April* 1, 1922	137
November 11, 1918	3,831	*April* 1, 1923	62
April 1, 1919	2,081	*April* 1, 1924	64
April 1, 1920	172	*April* 1, 1925	65
April 1, 1921	145	*April* 1, 1926	60

Stationary Ships, Motor Launches, Coastal Motor Boats, Surveying Vessels, Particular Service Vessels, Yachts, Tugs, Trawlers, Drifters, etc. (*The number of ships of these types* not *in commission, are not readily ascertainable.*)

TABLE "BB."

NUMBERS OF H.M. SHIPS, NAVAL PERSONNEL AND DOCKYARD WORKPEOPLE, 1914, 1918 TO 1926.

Date.	H.M. Ships.					Naval Personnel.			Dockyard Workpeople.		
	Full commission.	Special, Reduced, and Reserve.	Paid off (including ships in charge of c. & m. parties).	Total Strength (excluding column 6).	*Additional Ships in commission.*	Officers.	Ratings.	Total.	Home yards.	Foreign yards.	Total.
	No.	No.	No.	No.	*No.*	No.	No.	No.	No.	No.	No.
July 1, 1914 . .	306	302	18	626	*52*	9,986	136,061	146,047	44,802	8,748	53,550
November 11, 1918	1,211	7	63	1,281	*3,831*	32,743	374,573	407,316	72,675	19,444	92,119
April 1, 1919 . .	722	271	189	1,182	*2,981*	27,018	241,093	268,111	69,682	17,658	87,340
April 1, 1920 . .	269	221	299	789	*172*	12,243	120,855	133,098	60,043	13,012	73,055
April 1, 1921 . .	247	213	58	518	*145*	10,409	112,926	123,335	59,163	11,140	70,303
April 1, 1922 . .	223	209	45	477	*137*	10,269	110,971	121,240	47,411	10,284	57,695
April 1, 1923 . .	211	208	41	460	*62*	8,570	93,642	102,212	40,199	9,960	50,159
April 1, 1924 . .	213	206	43	462	*64*	8,236	93,090	99,326	42,269	10,133	52,402
April 1, 1925 . .	223	216	29	468	*65*	8,384	91,720	100,104	42,052	11,357	53,409
April 1, 1926 . .	210	201	24	435	*60*	8,265	92,360	100,625	39,661	11,237	50,898

REMARKS.

Date of Information.—For H.M. Ships, as in first column; as regards *Personnel*, the numbers quoted are those at the nearest available date.

H.M. Ships.—The numbers do not include ships in the Naval Service of the Dominions, nor ships paid off for disposal. The additional ships in commission comprise—Stationary Ships, Motor Launches, Coastal Motor Boats, Surveying Vessels, Particular Service Vessels, Yachts, Tugs, Trawlers, Drifters, etc. The numbers of these *not* in commission during the earlier years are not readily ascertainable, and have therefore been omitted throughout.

Naval Personnel.—The numbers do not include Officers on Half-Pay or Unemployed Pay, or Officers and Men lent to Dominion Navies. Officers and Men of the Coast Guard are included until early in 1923, when the *personnel* occupied on the non-naval service of Revenue Protection and Life-saving were transferred to the Board of Trade. *Personnel* of the Shore Signal and Wireless Services, and R.M. Police are included.

TABLE "CC."—FLEET STRENGTH.

(a) Ships in Full Commission; (b) Ships in Commission with Special, Reduced and Reserve Complements; (c) Ships paid off, including ships in charge of Care and Maintenance Parties.

Ships in the Naval Service of the Dominions and Ships paid off for Disposal are not included.

Class of Ship.	July 1, 1914.			Nov. 11, 1918.			April 1, 1919.			April 1, 1920.		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Battleships *a*	30	30	—	36	2	12	20	19	9	16	15	4
Battle Cruisers	7	—	1	8	—	—	5	2	1	3	3	2
Cruisers *a*	44	54	2	94	3	7	60	29	15	37	13	20
Monitors	—	—	—	34	—	—	15	7	12	—	4	5
Aircraft-Carriers	—	—	1	13	—	—	12	—	—	3	2	—
Flotilla Leaders	1	—	—	19	—	2	9	14	—	10	5	10
Destroyers	98	106	7	389	—	12	205	114	55	82	97	148
Torpedo Boats	11	88	7	90	—	2	5	27	25	—	2	5
Submarines	72	—	—	131	—	10	92	—	40	53	11	29
Sloops (new)	—	—	—	102	—	5	105	—	4	18	2	25
Sloops (old)	8	3	—	5	1	2	6	1	1	4	1	1
Paddle Minesweepers	—	—	—	28	—	2	28	—	2	—	—	—
Twin-Screw Minesweepers	—	—	—	55	—	—	63	10	4	2	50	14
Tunnel Minesweepers	—	—	—	8	—	1	9	—	—	—	—	—
Patrol Boats	—	—	—	60	—	2	25	37	1	4	9	28
Gunboats, 1st class	10	8	—	13	—	—	10	1	1	4	—	—
River Gunboats	10	—	—	18	—	4*c*	20	—	2*c*	20	—	— *c*
Whalers	—	—	—	12	—	—	—	—	14	—	2	—
Destroyer Depôt Ships	6	3	—	13	—	—	7	5	2	4	3	3
Submarine Depôt Ships	7	3	—	13	1	—	10	2	1	8	1	—
Minelayers (Minelayers	—	7	—	8	—	—	3	3	—	—	—	3
(Monitors converted)	—	—	—	—	—	—	—	—	—	—	—	2
Repair Ships	2	—	—	4	—	—	3	—	—	1	1	—
Armed Merchant Cruisers	—	—	—	30	—	2	1	—	—	—	—	—
Commissioned Escort Vessels	—	—	—	9	—	—	—	—	—	—	—	—
Armed Boarding Steamers	—	—	—	19	—	—	9	—	—	—	—	—
	306	302	18	1211	7	63	722	271	189	269	221	299
**Additional ships* in commission	52			3831			2061			172		

* *Stationary Ships, Motor Launches, Coastal Motor Boats, Surveying Vessels, Particular Service Vessels, Yachts, Tugs, Trawlers, Drifters, etc. The numbers* not *in commission during the earlier years are not readily ascertainable, and have therefore been omitted throughout.*

a The numbers for November 11, 1918, exclude 12 Battleships and 20 Cruisers converted from their original type to Depôt Ships, etc.; *b* includes 1 commissioned for Trials; *c* excluding River Gunboats transferred to other Departments; *d* includes 2 to be scrapped by December 31, 1926, under the Washington Treaty; *e* includes 2 to be scrapped by December 31, 1926, under the Washington Treaty; *f* includes 2 Cruisers under reconstruction as Aircraft-Carriers.

TABLE "CC."—FLEET STRENGTH.

(a) Ships in Full Commission; (b) Ships in Commission with Special, Reduced and Reserve Complements; (c) Ships paid off, including ships in charge of Care and Maintenance Parties.

Ships in the Naval Service of the Dominions and Ships paid off for Disposal are not included.

April 1, 1921.			April 1, 1922.			April 1, 1923.			April 1, 1924.			April 1, 1925.			September 1, 1926.		
(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
13	15	1	12	8	2	12	5	1	13	4	1	13	4	1	9	6*d*	3*e*
3	3	1	3	3	1	2	1	1	2	1	1	2	1	1	2	2*b*	—
37	10	2	33	13	—	32	11	1	32	7	4	31	5*b*	7	31	8	3
—	3	2	—	—	5	—	1	4	—	—	2	—	3	—	—	3	—
1	4	—	2	2	1	3	—	1	4	1	2	4	2*b*	2	3	2*f*	3*f*
10	5	—	8	7	—	7	8	—	7	8	—	8	8	—	6	9	1
80	91	1	64	107	—	56	117	—	56	117	1	56	117	3	48	99	6
—	1	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—
46	13	26	39	10	9	38	13	7	40	12	6	46	12*b*	4	44	11*b*	1
18	1	8	20	—	6	20	—	4	18	2	12	21	—	11	23	—	7
1	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—
—	6	—	—	6	—	—	6	—	—	6	—	—	6	—	—	6	—
3	44	9	9	37	10	10	35	11	10	36	10	10	46	—	10	45	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	9	4	3	8	5	3	5	3	3	3	—	2	2	—	2	3	—
2	—	—	2	—	—	2	—	—	2	—	—	2	—	—	—	—	—
17	—	1*c*	16	—	2*c*	13	—	5*c*	14	1	3*c*	14	4	—	15	—	3
—	2	—	—	2	—	—	2	—	—	2	—	1	1	—	—	2	—
4	3	—	3	3	—	3	3	—	3	3	—	3	2	—	1	1	—
8	—	—	8	—	—	8	—	1	8	—	1	9	—	—	9	—	—
—	—	1	—	—	1	—	—	1	—	1	—	—	1	—	—	1	—
—	2	—	—	1	1	—	1	1	—	2	—	—	2	—	—	4	—
1	1	—	1	—	1	1	—	—	1	—	—	1	—	—	1	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
247	213	58	223	209	45	211	208	41	213	206	43	223	216	29	204	202	27
145			*137*			*62*			*64*			*65*			*53*		

* *Stationary Ships, Motor Launches, Coastal Motor Boats, Surveying Vessels, Particular Service Vessels, Yachts, Tugs, Trawlers, Drifters, etc. The numbers* not *in commission during the earlier years are not really ascertainable, and have therefore been omitted throughout.*

a The numbers for November 11, 1918, exclude 12 Battleships and 20 Cruisers converted from their original type to Depôt Ships, etc.; *b* includes 1 commissioned for Trials; *c* excluding River Gunboats transferred to other Departments; *d* includes 2 to be scrapped by December 31, 1926, under the Washington Treaty; *e* includes 2 to be scrapped by December 31, 1926, under the Washington Treaty; *f* includes 2 Cruisers under reconstruction as Air-craft-Carriers.

TABLE "DD."—NUMBER OF DOCKYARD WORKPEOPLE BORNE.

VOTE 8/1.B. AND OTHER VOTES.

	July 4, 1914.	Nov. 16, 1918.	April 5, 1919.	April 3, 1920.	April 2, 1921.	April 1, 1922.	April 7, 1923.	April 5, 1924.	April 4, 1925.	March 13, 1926.
HOME YARDS—										
Portsmouth	14,083	18,807	18,484	17,731	18,293	14,914	12,431	13,405	13,223	13,259
Devonport	13,059	17,346	16,785	14,608	15,075	12,773	11,449	12,022	11,984	11,832
Chatham	10,503	12,832	12,966	11,728	11,316	9,845	9,051	9,503	9,560	9,405
Rosyth	—	7,230	6,676	6,236	5,966	3,864	2,920	2,901	2,787	1,332
Sheerness	3,038	3,596	3,242	3,247	3,223	2,719	2,279	2,370	2,347	2,424
Pembroke	2,488	3,644	3,367	3,021	3,036	1,919	1,249	1,316	1,430	706
Haulbowline	1,162	2,226	2,048	1,597	1,178	521	—	—	—	—
Portland	248	766	774	546	562	481	488	480	452	429
West India Docks	221	408	403	314	227	191	192	187	186	187
Slough	—	—	—	—	—	13	13	13	13	13
Albany Street	—	—	—	—	—	53	51	51	50	53
Invergordon	—	4,493	3,886	672	165	27	22	21	20	21
Scapa Flow	—	669	434	—	—	—	—	—	—	—
Dover	—	658	617	343	122	91	54	—	—	—
	44,802	72,675	69,682	60,043	59,163	47,411	40,199	42,269	42,052	39,661
FOREIGN YARDS—										
Malta	3,890	10,787	10,197	7,210	5,307	5,247	5,241	5,225	6,343	6,636(a)
Gibraltar	1,897	4,342	4,043	2,725	2,289	1,420	1,184	1,343	1,132	1,190(a)
Hong Kong	2,231	2,794	1,992	1,944	2,401	2,510	2,455	2,537	2,628	2,139(b)
Cape	223	535	479	390	411	373	390	360	395	402(c)
Bermuda	425	914	873	653	628	624	586	581	633	626(d)
Trincomali	—	—	—	—	—	—	—	—	141	159(d)
Wei Hai Wei	82	72	74	90	104	110	104	87	85	85(e)
	8,748	19,444	17,658	13,012	11,140	10,284	9,960	10,133	11,357	11,237
Grand Total	53,550	92,119	87,340	73,055	70,303	57,695	50,159	52,402	53,409	50,898

Latest date available—(a) March 13, 1926; (b) February 6, 1926; (c) February 20, 1926; (d) February 27, 1926; (e) January 31, 1926.

TABLE "EE."—NAVAL PERSONNEL.

ACTUAL NUMBERS BORNE SINCE THE WAR, AND ON JULY 1, 1914.

	Serving in H.M. Ships and Establishments on									
	July 15, 1914.	Nov. 15, 1918.	March 15, 1919.	March 15, 1920.	March 15, 1921.	March 15, 1922.	March 15, 1923.	March 15, 1924.	March 15, 1925.	March 15, 1926.
OFFICERS—	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
R.N.—Active List	9,450	14,047	14,430	10,795	9,559	9,444	7,877	7,744	7,894	7,777
Retired List	24	1,356		323	272	274	231	49	47	41
R.M.—Active List	501	1,523	1,399	636	500	546	454	431	433	435
Retired List	10	149		—	6	5	8	12	10	12
R.N.R.	1	7,529	—	288	63	—	—	—	—	—
R.N.R. (T.)	—	2,884	8,236	49	—	—	—	—	—	—
R.N.V.R.	—	5,255	2,953	152	9	—	—	—	—	—
	9,986	32,743	27,018	12,243	10,409	10,269	8,570	8,236	8,384	8 265
RATINGS—										
R.N.—Active Service	117,890	199,871	153,187	101,907	96,246	95,325	82,210	80,885	81,160	81,554
Pensioners	441	8,590		2,052	2,030	2,575	1,952	450	428	478
R.F.R.	—	15,109	5,527	52	3	—	—	—	—	—
R.M.—Active Service	17,682	47,533	35,019	15,915	14,579	13,048	9,362	9,430	9,789	9,967
Pensioners	48	2,251		—	12	13	107	316	336	356
R.F.R.	—	4,071	2,150	2	10	10	11	9	7	5
R.N.R.	—	17,141	26,903	39	6	—	—	—	—	—
R.N.R. (T.)	—	34,261		546	—	—	—	—	—	—
R.N.V.R.	—	45,746	18,307	342	40	—	—	—	—	—
	136,061	374,573	241,093	120,855	112,926	110,971	93,642	91,090	91,720	92,360
Grand Total	146,047	407,316	268,111	133,098	123,335	121,240	102,212	99,326	100,104	100,625

Officers on Half-Pay, Unemployed Pay or lent to Dominion Navies, etc., are not included. Officers and Men of the Coast Guard are included until early in 1923, when the *personnel* occupied on the non-naval services of Revenue Protection and Life Saving were transferred to the Board of Trade. R.M. Police are included.

DETAILED COMPARISON OF DOCKYARD WORKPEOPLE BORNE
July 1914 *and March* 1926.

	Numbers borne.		Increase.	Decrease.
	July, 1914.	March, 1926.		
Portsmouth	14,083	13,259	—	824
Devonport	13,059	11,832	—	1,227
Chatham	10,503	9,405	—	1,098
Rosyth	—	1,332	1,332	—
Sheerness	3,038	2,424	—	614
Pembroke	2,488	706	—	1,782
Haulbowline	1,162	—	—	1,162
Portland	248	429	181	—
W. I. Docks	221	187	—	34
Slough	—	13	13	—
Albany Street	—	53	53	—
Invergordon	—	21	21	—
Home Yards	44,802	39,661	1,600	6,741
Malta	3,890	6,636	2,746	—
Gibraltar	1,897	1,190	—	707
Hong Kong	2,231	2,139	—	92
Cape	223	402	179	—
Bermuda	425	626	201	—
Trincomali	—	159	159	—
Wei Hai Wei	82	85	3	—
Foreign Yards	8,748	11,237	3,288	799
Grand Totals	53,550	50,898	4,888	7,540

Net Decrease 2,652.

DOCKYARD VESTED INTERESTS.

The inflated totals of the *personnel* employed at the dockyards prompt an inquiry as to the reasons why this should be. In the main, they are twofold. The dockyards have admittedly been used since the war to give employment to men irrespective of the needs of the Navy. The Notes accompanying the Memorandum of the First Lord (Lord Chelmsford), dated March 10, 1924, include a special paragraph dealing with "Measures taken during the past winter to place orders at the expense of Navy Estimates in relief of unemployment." Among these measures was the entry of 2,500 additional men in the dockyards and 1,000 men at the naval ordnance depôts on arrears of work which had previously been deferred from reasons of economy. It has been a sore point with many naval students, and supporters of an adequate fleet, that money spent in this way should be charged to naval votes, and not to some civil department, seeing that it does not primarily and directly benefit the seagoing forces. There are probably sound reasons why work should be found in the dockyards for men who would otherwise come on the unemployment fund, but they are of a social and economic nature, and a clear line of demarcation should be drawn between what the Admiralty deem necessary for the maintenance

of our naval forces, and what is superimposed thereupon for other reasons entirely. The cost of the two services should also be kept entirely separate, so that the Admiralty are not accused, as has happened since the armistice, of piling up dockyard expenditure, when, as a matter of fact, the work involved is surplus to Navy requirements.

The other reason for overstaffed dockyards is that the officials and workmen therein wield political and trades union influence of a potent character, and are thus able to bring pressure to bear upon the Government or the Treasury which is quite beyond the power of the naval officers and men. Over twenty years ago, Lord Fisher wrote:

> To get rid of a dockyard workman involves agitation in every direction—in Parliament, at the Treasury and locally, and even Bishops throw themselves into the fray, like the Bishop of Winchester at Portsmouth, instead of looking after his own disorganized and mutinous Established Church. There is now a plethora of shipwrights at Chatham, because the Treasury will not allow their transfer to other yards, and a paucity of boiler makers because unwanted men occupy their places, and the scandal exists of men being entered at Devonport with men having no work at Chatham. But, of course, this is one of the blessings of Parliamentary Government, Treasury Control, and a Free Press!

The truth of these words was conclusively proved in connection with the attitude of the Admiralty towards Pembroke Dockyard. Soon after the armistice, this yard was declared by the naval chiefs to be surplus to Fleet requirements, and the decision to close it was announced by Lord Lee of Fareham in his Memorandum dated March 12, 1921. Political agitation prevented the carrying out of this policy. At the last general election, Mr. Lloyd George made a speech in which he said that he had saved Pembroke for Wales when the Admiralty wished to close it. The storm of opposition organized to the Admiralty proposals in regard to Rosyth and Pembroke, even though the number of men involved in the discharges was but 2,500, had no counterpart when the *personnel* of the Fleet was reduced by no less than 20,000 in 1922, included in which were 1,835 officers who for the most part had entered as boys to make the Navy their life career. Even when the moment came, from dire necessity, to increase the pay of the Navy shortly after the armistice, it has been pointed out that the step then taken was prompted less by a desire to effect an honourable and just settlement than by a sense of apprehension caused by movements of unrest among the men.

Size of Civil Staffs.

The feeling that the civil departments of the Admiralty are still much overstaffed was also the subject of public comment during the past year, and in quarters far removed from one another. For example, the Federation of Engineering and Shipbuilding Trades, representing many thousands of dockyard workers, sent a resolution to the Government in November, 1925, viewing with alarm and regret the decision to close Rosyth and Pembroke, intensifying unemployment and inflicting hardships on citizens as well as the

workmen. In calling upon Parliament to reverse the decision, the Federation contended that economy in naval administration could be secured by abandoning the Singapore base and by "the reduction of redundant officials at the Admiralty." In another quarter altogether, the Admiralty came in for sharp criticism on its civil side. A writer in the *Quarterly Review* in an article entitled "The Real Naval Incubus," directed attention to the increased cost of the office, in spite of reductions in the Navy, and to the undue power and unfitting responsibilities exercised by the civil staff. Only the unfortunate under-dog—the temporary clerk, the messenger, and the charwoman—is "economized" out of the building, said this writer. While there had been a reduction in the cost of practically every naval department at the Admiralty, as between the 1925 and 1926 Estimates, there had actually been an increase from the already high figure of £74,817 in the former year to £75,060 this year in the cost of the Secretary's Department. The reason why the Board of Admiralty had not been able to reduce the Navy's overhead charges was ascribed to the extent to which the Civil Service rules in that office. A new "Esher Committee" to overhaul the administrative machinery of the Admiralty, as the original one did for the War Office in 1904, was advocated.

Naval Engineers.

The most discussed Admiralty Fleet Order of recent months has been that which had the effect of reopening the unhappy controversy respecting the position and status of the naval engineer officers. For well over ten years, since the engineers of the old separate entry were admitted to the military branch of the Royal Navy on January 1, 1915, and allowed to wear the executive "curl" on their uniforms, there had been a cessation of the old controversy on the subject, and the need for anything like the old forms of agitation which were indulged in when the Navy may be said to have been divided into two separate camps had passed away. Time and experience had obliged many changes in the Selborne-Kerr-Fisher scheme of common entry and education, and no longer was it possible for a young officer specializing in engineering to revert to deck duties in the hope of rising to command a ship or a fleet. But still his status was absolutely identical with that of his term-mate from the college or training ship who had not gone in for engineering. Both were borne on the same list, both wore the same uniform, and both were eligible for the same special duties, honours, and the like, as officers of the military branch of the Royal Navy. All this has been altered by the order referred to.

The order (A.F.O. 3241/1925) decreed that the former division of officers into branches, as laid down in article 168 of the King's Regulations, was to be abolished, and that "officers in future are to be divided into the following categories." Then followed thirteen of these categories, the first being "executive officers," and the second "engineer officers." The term "executive officer" will include gunners, gunners (T), boatswains, signal boatswains, warrant

telegraphists, warrant masters-at-arms, and officers promoted therefrom, and the officers of the Permanent Cruiser Service. Similarly, the term " engineer officer " will include warrant engineers, warrant mechanicians, and officers promoted therefrom; and all (E) officers will be included in the category of engineer officers. The eligibility to succeed to the command of a ship and to exercise military command was limited by the new order to executive officers as defined above. The special arrangements under which certain (E) officers had hitherto retained this eligibility now finally ceased to exist.

Separate Lists and Uniform.

The order further directed that all officers qualifying or employed on engineering duties, from midshipmen upwards, will be shown in separate seniority lists in the Navy List, in the same section as other engineer officers, in the following order: Engineer commanders, commanders (E), lieutenant-commanders (E), engineer lieutenant-commanders, lieutenants (E), engineer lieutenants, sub-lieutenants (E), acting sub-lieutenants (E), mates (E), and midshipmen (E). A corresponding arrangement was ordered to be followed in the retired list. (E) officers will also in future be shown under ships and establishments in the Navy List with other engineer officers, in the order in which they take charge in their department.

In the matter of uniform, it was decided that all (E) officers of the rank of midshipmen and upwards are to wear the purple distinction cloth worn by other engineer officers. A more distinctive shade of purple is to be used.

Reason for the Change.

Questioned in the House of Commons on December 9, 1925, the First Lord gave the following explanation of the new order:

Except in the case of officers who volunteered for engineering prior to December, 1918, and who did not accept the new Regulations then introduced, there is no provision in the King's Regulations of 1923 that the promotion of engineer officers should be in competition with executive officers, nor do the King's Regulations deal with the question of uniform.

Nothing in the new Admiralty Fleet Order prejudices any cadets who since that date have volunteered for engineering duties, as (E) officers are already, under the Regulations in force since 1919, considered for promotion with other engineer officers, and not with executive officers, though they have remained in the Navy List on the general list of executive officers until reaching the rank of commander, Indeed, promotion on a separate list is, under present conditions, very considerably to their advantage.

As regards officers who volunteered prior to 1923, in a very few isolated cases—not more than five in all—the officers retained certain responsibilities as to military command, while the vast majority surrendered their option in this respect.

Otherwise the changes made are limited to the inclusion of officers' names in separate lists in the Navy List, and the direction that they shall now wear the same uniform as other officers employed on engineering duties.

These are purely matters of practical convenience, arising from the fact—not now questioned, I think, in any quarter—that under present-day conditions the knowledge, duties, and capabilities of executive and engineer officers, though of equal importance, are definitely differentiated and cannot be combined as was once thought possible.

The changes make no difference whatever to the position and status of the officers

under the various regulations, and their relative rank and precedence, chances of promotion, rates of pay, etc., are in no way prejudiced; and I would earnestly deprecate suggestions that the changes imply inferiority in any shape or form, as such is not the opinion nor intention of the Board of Admiralty.

The Admiralty order and the First Lord's defence of it were the subject of criticism in the daily Press. Rear-Admiral A. P. Davidson, D.S.O., submitted that the evolution of the engineer to a military branch was a sound one; but that, after the Admiralty had accorded military status to the engineer, and encouraged younger officers to take up engineering, there was now a throw-back to what is in reality a civilian status, with the withdrawal of military rank. He further submitted that, however justifiable the legal ethics might be to abolish the military rank of naval engineer, morally it was indefensible. "The point is," said the Rear-Admiral, "how can this new order be for the good of the Service?" On the other hand, Admiral (now Sir) W. H. Henderson held that the order had done no more than carry to its logical conclusion the decision made in 1920 that the Selborne scheme for interchange between deck and engineering duties had proved impracticable. But Rear-Admiral Sir S. Eardley-Wilmot, recalling the great advance made in 1902 by common entry and universal preliminary training, which produced good fellowship such as had not existed before, said that "The status of the new engineer officer was distinctly raised in accordance with the increased importance of his duties. Why the recent change was made, and what defect, if any, it was intended to remove, I have not found in answers by civilian members of the Admiralty."

No officer of the engineer branch intervened during this discussion to excuse or support the line of action taken by the Admiralty. On the other hand, Engineer Rear-Admirals Charles Sheen, C.B., John W. Ham, C.B., and Charles Stevens, C.B.E., and Engineer Captains J. H. H. Ireland, M.V.O., H. W. Kitching, D.S.O., and Edgar C. Smith, O.B.E., were among those who drew attention to the retrograde nature of this step.

Engineering Societies Protest.

Action was taken by the engineering societies of the country to make known their views on the subject to the Admiralty. On January 14, 1926, a deputation waited upon Mr. Bridgeman, First Lord, Lord Stanhope, Civil Lord, and Vice-Admiral the Hon. Sir Hubert Brand, Second Sea Lord, from the Institutions of Civil Engineers, Mechanical Engineers, Naval Architects, and Electrical Engineers; and spoke also on behalf of the North-East Coast Institution of Engineers and Shipbuilders, and the Institute of Marine Engineers. An aggregate membership of some 39,000 professional engineers was represented by these six societies, and the deputation included Sir William Ellis (Chairman of the Joint Committee), Sir Archibald Denny, Dr. H. S. Hele-Shaw, Brigadier-General Magnus Mowat, Sir Charles Parsons, Sir John Thornycroft, and other distinguished engineers and scientists. Six weeks later, on February 26, 1926, the First Lord's Secretary wrote to the Com-

mittee that "Mr. Bridgeman has come to the conclusion that no real grounds for grievance have arisen as the consequence of the Admiralty Fleet Order No. 3241, issued in November, 1925, and he is confident that experience will convince the engineer officers of the Royal Navy that there was nothing in that order derogatory to their position." On March 9, the Committee met again to consider the reply, and expressed themselves as not only extremely dissatisfied, but as viewing the statements of the First Lord with grave concern as a symptom of the attitude of mind prevailing at the Admiralty. Noting that the First Lord had consulted with his colleagues on the Board, they pointed out that this Board does not include an engineer officer, and declared their intention to take steps, both in the Press and in Parliament, to make their views known to the public.

The question was raised in the House of Lords on July 14, 1926, by the Duke of Northumberland, President of the Institution of Naval Architects, who showed that a most unfortunate situation had been created, which will only be rendered worse by belittling it and calling it a "fuss about nothing." In the debate, Viscount Chelmsford said that when the question was before him as First Lord in 1924, he advised no action be taken upon it. There was no acute demand for any change, and he refused to stir up trouble by introducing a change in the present admittedly illogical system, a system which at all events was working. He supported the Duke of Northumberland, as did Lord Selborne, who was First Lord at the time of the adoption of common entry and education. Tracing the evolution of the scheme, Lord Selborne said he was forced to the conclusion that while the abolition of the military branch may do great harm, it cannot possibly do good. The reply of the Admiralty was made by Lord Stanhope, Civil Lord, who said that the order did not affect the rank, title or powers of engineer officers. It did little more than regularize the situation already existing. It swept away an anomalous position, and divided all officers into categories according to their duties.

On March 23, 1926, in selecting officers for the position of Naval Aide-de-Camp to the King, the Admiralty announced the appointment of Engineer Captain E. P. St. John Benn, in command of the Royal Naval Engineering College at Keyham, as one of His Majesty's Aides-de-Camp. This was the first time an officer of the engineer branch had held the distinction, and general satisfaction was expressed at the admission of this category of officers to such honourable service.

Engineer Branch Promotions.

From February 1, 1926, all promotions of engineer officers to the equivalent rank of lieutenant have been to the rank of lieutenant (E). Any subsequent promotions of officers so promoted will be to lieutenant-commander (E), commander (E), etc. The order on this subject (504/26) meant that the old rank of engineer-lieutenant will become extinct when its present holders pass off the list. At the present time, the most junior of the officers of the old system of separate entry are engineer lieutenant-commanders of 1920

seniority. From 1920 to 1924, there was a gap during which no engineer lieutenant-commanders, with the exception of one delayed, were advanced, but from 1924 onward there have been steady advancements to the rank from the engineer lieutenants who attained the latter grade other than from the old College at Keyham. All the engineer lieutenants of to-day are those who were transferred from the Royal Naval Reserve, or were promoted from the ranks of commissioned engineer or commissioned mechanician, or from mate (E). It was an anomaly that whereas a mate in the executive branch, on promotion, became a lieutenant, R.N., on the same list as those promoted from midshipman, in the engineer branch, he was advanced, not to lieutenant (E), but to engineer lieutenant. This is now abolished, as the term lieutenant (E), instead of denoting only the officers who had entered as cadets and had specialized in engineering, now covers all engineer officers of the equivalent rank of lieutenant, whatever their mode of entry and training. The first officer to become a lieutenant (E) on the active list from the grade of commissioned engineer was William A. Pickup, of H.M.S. Assistance, promoted on April 1, 1926; he attained warrant rank as an artificer engineer on November 1, 1911. The first to be promoted lieutenant (E) on the active list from the stoker branch was Commissioned Mechanician Arthur Rowe, of H.M.S. Sabre, promoted on July 18, 1926; he was promoted to the grade of Warrant Mechanician on September 1, 1914.

II. THE DOMINION NAVIES.

Australia.

A notable event in the history of the Royal Australian Navy during the past year has been the accession to the command of the active Fleet of an Australian officer, Commodore George F. Hyde, R.A.N. He succeeded Commodore T. E. Wardle, D.S.O., on April 30, 1926. Commodore Hyde began his sea career in the Merchant Service, and joined the Royal Naval Reserve as a midshipman in 1896. As a lieutenant, R.N.R., he served voluntarily for over five years with the Fleet, and in 1905 was transferred to the Royal Navy as lieutenant, with his original seniority. Lent for duty under the Commonwealth Government in 1911, he has been in the Royal Australian Navy ever since.

A change also occurred in the post of First Naval Member of the Australian Naval Board at Melbourne, in which Rear-Admiral P. H. Hall-Thompson, C.B., C.M.G., was succeeded by Rear-Admiral W. R. Napier, C.M.G., D.S.O. The latter officer was the fourth in succession to be lent from the active list of flag officers of the Royal Navy since the war, a plan which ensures the Australian Fleet receiving the benefit of the latest knowledge and experience in the parent Service. At the same time, the appointment of Commodore Hyde indicates that regard is had to the important matter of providing opportunity for the advancement of permanent Australian officers to the higher posts; and another indication of

this is the appointment of Captain Henry P. Cayley, R.A.N., formerly Captain-Superintendent of Training at the Flinders Naval Depôt, as Second Naval Member of the Naval Board.

As regards new construction, the two cruisers referred to in the last " Annual " are building at the works of Messrs. John Brown & Co., Ltd., Clydebank. They have been named Australia, after the Commonwealth itself, and also after the original battle-cruiser Australia, which served throughout the war and was sunk in accordance with the Washington Treaty ; and the Canberra, after the new Federal capital.

The two submarines in the programme have been launched, at Messrs. Vickers, Ltd. The " Oxley," named after one of the early Surveyors-General of New South Wales, who was also a noted explorer, took the water on June 29 ; and the Otway, named after Cape Otway, in Victoria, and also after Captain Albany Otway, R.N., who gave his name thereto, was put afloat on September 7, 1926.

New Zealand.

New Zealand now maintains a second cruiser in her Naval Division, the Diomede, Captain J. S. M. Ritchie, having joined the Dunedin at Auckland on January 21, 1926. But as the Governor-General, in his speech at the opening of Parliament in June last pointed out, while the addition of this cruiser means an increase in expenditure on naval defence, the Dominion Government are of opinion that still more must be done before New Zealand can claim to be bearing her fair share of Imperial naval defence.

Two useful small craft have been acquired for the New Zealand Division. The trawler Wakakura, for mine-sweeping training, was fitted out by an Inverness firm under Admiralty supervision, completed with stores, etc., at Sheerness, and left Portland on June 14 for her long voyage to Auckland, via the Panama Canal. Then on April 15, 1926, the tug St. Boniface, one of the Admiralty Saint class, was handed over at Rosyth to the New Zealand Government agents, and was renamed the Toia.

On the morning of August 10, 1926, Rear-Admiral Alister F. Beal, C.M.G., was succeeded in command of the New Zealand Squadron, and as First Naval Member of the New Zealand Naval Board, by Commodore George T. C. P. Swabey, D.S.O. The latter was the third occupant of this dual post since it was created in May, 1920, the first being Rear-Admiral Alan G. Hotham. Although little has been published concerning its activities since 1920, the New Zealand Squadron has justified its existence, and has upheld the prestige of the country and the Fleet among the islands in the Pacific for which the Dominion assumed responsibility after the war.

South Africa.

The South African Naval Force has continued its work upon the lines of the previous year, no change being made in its composition. Speaking at the prize distribution on board the South African training

ship General Botha, the Chairman of the Board of Control, Mr. Clough, stated that the Admiralty had offered to accept annually a number of boys from the ship as special entry cadets for the Royal Navy. Special arrangements have been made in the ship as regards the extra tuition of such boys, for which, of course, additional fees have to be charged, but even so the cost is much lower than if such preparation was obtained in England.

Canada.

The Canadian destroyers Patriot and Patrician have made cruises from Halifax and Esquimalt respectively during the past year, and members of the Royal Canadian Naval Volunteer Reserve have been accommodated for training in the vessels of the North American Squadron of the Royal Navy. For the summer cruise of the Squadron to Canadian ports in 1926, accommodation was offered by the Admiral for 12 engine-room and 24 other ratings in the Capetown; 16 seamen, 9 stokers, 3 chief stokers or mechanicians, and 3 stoker petty officers in the Curlew; 12 engine-room and 24 other ratings in the Colombo; and 6 engine-room ratings in the Wistaria.

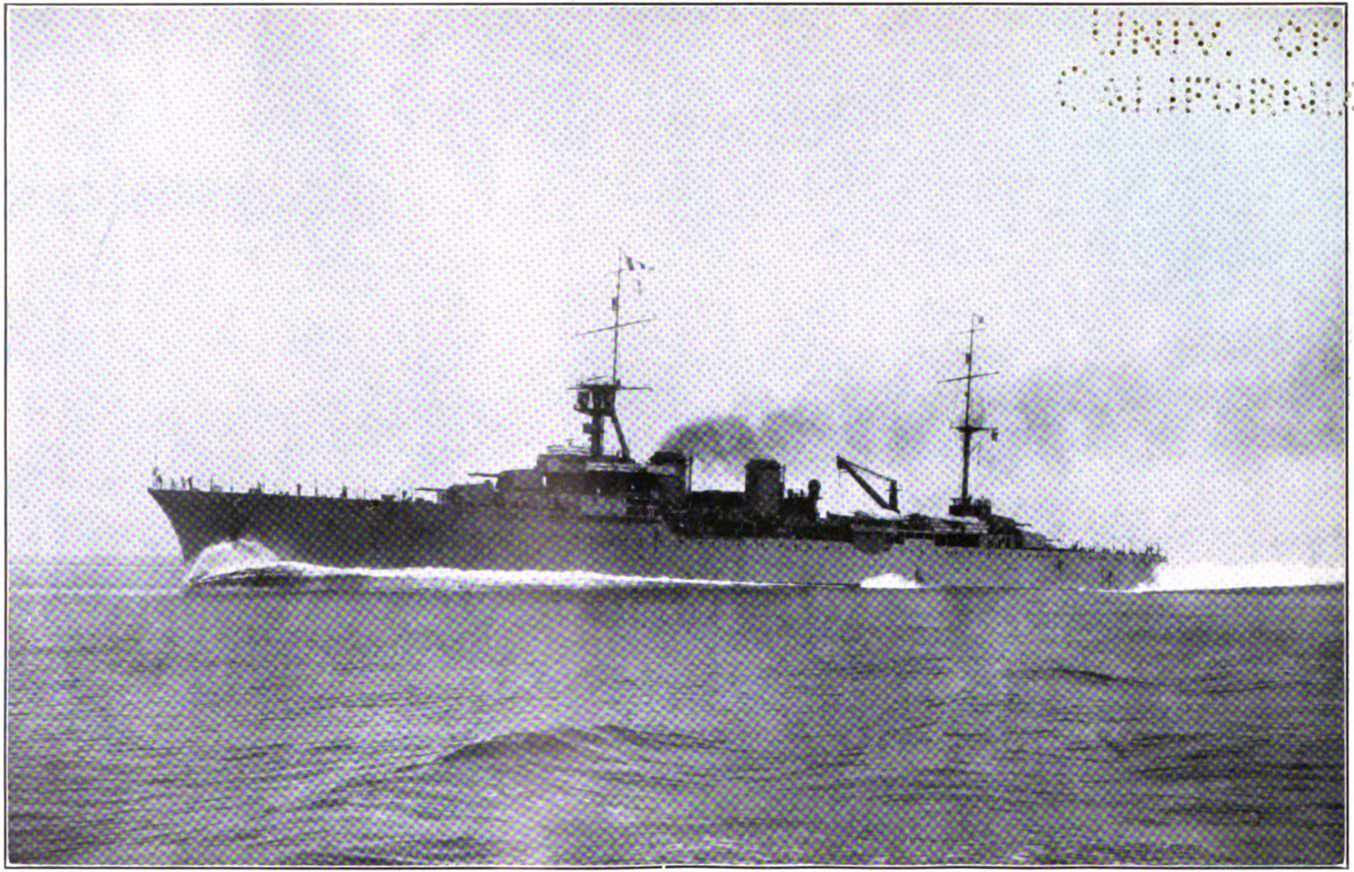
The Canadian minesweeper Armentieres sank on September 2, 1925, after striking a rock on the west coast of Vancouver Island, but the crew reached the shore in safety. The vessel is still retained on the effective list, and was apparently not much damaged.

The Year's Work.

The declaration of a general strike in May, 1926, cast special responsibilities upon the Navy which were not only faithfully discharged, but which reflected once again the high standard of efficiency and resourcefulness of the officers and men of the modern Fleet. A record of their work at this time may be read in the "Fortnightly Review" for July, 1926, from the pen of Mr. Archibald Hurd; and in the Fighting Forces for the same month, from "Excubitor."

The political situation in China, which, as the First Lord remarked in his Memorandum, caused heavy demands to be made on the ships of the British Squadron out there for protection, led to action having to be taken early in September, 1926, on the Upper Yangtse. To effect the rescue of certain merchant officers seized by a Chinese general, an expedition under Commander F. C. Darley, of the Despatch, proceeded up to Wan-hsien in an improvised merchant vessel, and although the release of the captured officers was effected, with one exception, Commander Darley and Lieutenants A. R. Higgins and C. F. Ridge were killed, and Lieutenant-Commander L. S. Acheson and O. Fogg-Elliot were wounded, in the course of the affair. Several ratings were also killed and wounded. The Admiralty conveyed to all concerned an expression of their warm appreciation that the traditional gallantry of H.M. Service was so well sustained.

Chas. N. Robinson,
Com. R.N.



(From "Marine Engineer and Motorship Builder.")

FRENCH CRUISER DUGUAY-TROUIN, 8000 TONS DISPLACEMENT.

(Built at the Brest Naval Dockyard.)

CHAPTER II.

Foreign Navies.

Although the time is approaching when the United States, Japan, France, and Italy, as well as the British Empire, will be at liberty, under the terms of the Washington Naval Treaty, to lay down capital ships to replace obsolescent vessels, no steps have so far been taken in this direction. In all foreign countries attention is, on the contrary, being devoted to the construction of cruisers and other auxiliary craft, with a consequent tendency for naval expenditure to rise. As will be seen, Turkey has adopted plans for the reconstitution of her naval forces. On the other hand, no progress is at present being made in Greece in carrying out the scheme which was prepared by the British Naval Mission under Admiral Sir Richard Webb.

UNITED STATES.

Aviation has, to a great extent, monopolized interest in naval matters in the United States, and the report of a Board appointed by the President for the purpose of studying and advising on the best methods of developing and applying aircraft to the needs of national defence has received consideration. The findings of this Board are referred to in detail later. In opening the Congress the President explained that work was going forward in modernizing the older battleships and in building aircraft-carriers, additional fleet-submarines, and fast scouting cruisers, but that anything that might be construed as competition with other nations was being carefully avoided.

The 14,000-Mile Cruise.

The most noteworthy event since the last issue of the " Annual " has been the 14,000-mile cruise of the Fleet to Australia and New Zealand in August of 1925. This extended cruise was carried out without a major breakdown of any sort whatever. The experience undoubtedly redounds to the sea-keeping qualities of the fleet and also to the efficient condition in which the ships are maintained. An interesting feature in the naval organization is an extensive train of oilers, repair ships, depôt ships, etc., which give it a high degree of mobility. It should be noted in this connection that the Fleet did not make this cruise starting from the home ports, but had already been carrying out manœuvres and exercises in the Pacific for some months. From the time when the ships assembled

for the spring manœuvres off Hawaii until their return from the Australian cruise—a period of about six months—the fleet, consisting of battleships, cruisers, destroyers, submarines, and other light craft, was maintained in a state of active sea-going mobilization, ending up with a cruise of some 14,000 miles without any event arising necessitating a return to the dockyards for repairs.

The New Estimates.

The 1926–27 Estimates were presented in February for a sum of 358,000,000 dollars, but were returned for revision with a view to reduction. The total sum ultimately voted was approximately 335,000,000 dollars. The following works of construction, re-construction and improvement were provided for:

(a) The continued construction of the two air-carriers, Lexington and Saratoga; five 10,000-ton cruisers, none of which has yet been laid down; six river gunboats, and three submarines.

(b) The modernization of the six older battleships, which includes additional protection against submarine attack, conversion to oil-burning, alterations for the purpose of providing better launching and handling arrangements for airplanes, and the installation of new fire-control systems in New York and Texas.

(c) The installation of catapults for the launching of airplanes in all the older battleships; such installation being already completed in the oil-burning battleships.

(d) Considerable sums were voted for the improvement of the channel and harbour at the Naval Station at Pearl Harbour, Hawaii, and for the general development of the submarine base at the same port.

(e) At the end of 1925 there were 891 naval aircraft and a further 399 were on order. The new estimates provide for the purchase of a further 227.

A large increase in the Fleet Air Arm is considered necessary, and a five-year programme will shortly be sanctioned, which aims at the establishment and maintenance of 1,000 airplanes in 1931.

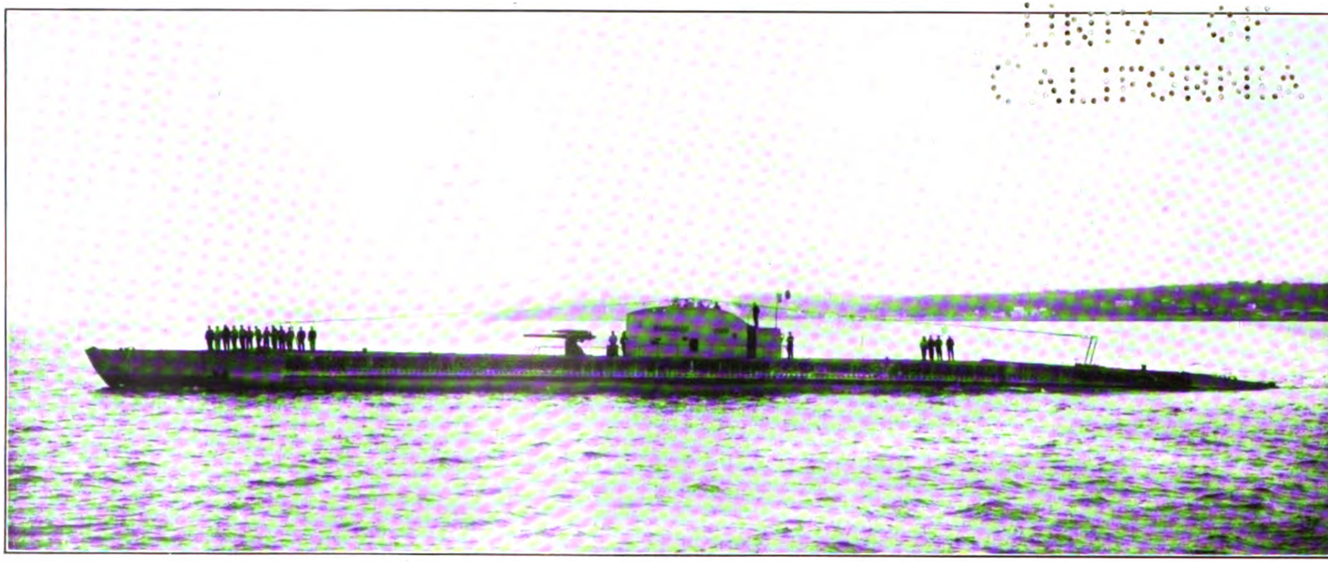
The numbers of ships to be maintained in commission are as follows:

Battleships, 3 with reduced crews	18
Cruisers, 2nd line	4
Light cruisers, 1st line	10
,, ,, 2nd line	3
Aircraft-carriers, 1st line	2
,, ,, 2nd line	1
Minelayers, 2nd line	2
Light minelayers	6
Destroyers, 1st line	103
Submarines	79
Fleet submarines, 1st line	4
Total	232 vessels

In addition to the above a number of auxiliary craft are provided for.

The following *personnel* are allowed for: commissioned officers 6,942; warrant officers 1,455; midshipmen 1,544; men 82,500; Marine Corps: officers 1,020; warrant officers 155; men 18,000.

The progress of the principal war vessels under construction on August 1, 1926, was as follows. Of the aircraft-carriers Lexington and Saratoga, the former was 83·6 per cent. complete, and should be finished on June 1, 1927, and the latter was 88·6 per cent. complete, and should be finished on April 1, 1927. Of the two cruisers of 10,000 tons, the Pensacola at New York Navy Yard was 0·9



FRENCH SUBMARINE MARSOUIN, 1,130 TONS SURFACE DISPLACEMENT.

per cent. towards completion, and the Salt Lake City, at the William Cramp Yard, 0·1 per cent.; these vessels will not be ready until July, 1929. The progress of fleet submarines was:—V 4, at Portsmouth Navy Yard, 49·4 per cent., to be finished October 1, 1927; V 5, at the same yard, 1·2 per cent., to be finished December 1, 1928; and V 6, at Mare Island, 0·3 per cent., to be finished March 1, 1929.

Naval Aviation.

Although progress on the aircraft-carriers Lexington and Saratoga has been slow, it is not to be assumed that the Navy is in the least degree indifferent to the value of aircraft in modern naval operations, or behindhand with its development. In fact, progress has been carried farther and faster in the United States than in any other country. The United States Navy has perfected the design of a catapult, which will discharge a heavy airplane with safety and certainty from the deck of a ship. Practically all the battleships and cruisers are either fitted or about to be fitted with two catapults, and provision is made for a large number of airplanes. Whatever may be the value of the torpedo or bombing airplane for offensive operations, it must be accepted that an equipment of this nature in a vessel on look-out duties must, *under certain conditions*, increase enormously the area which such a vessel can search in a given time, and enable her to scout many miles further ahead of her own position than she can see. The tactical value of any ship thus equipped is consequently immeasurably enhanced.

Two committees have been sitting to consider the future policy of aeronautics, *i.e.* naval, military, and commercial. One, a Congressional Committee known as the Lampert Committee, and the other a Board appointed by the President, known as the Morrow Board. The Lampert Committee report agreed generally with the findings of the Morrow Board, which covered more ground than the former inquiry. Among the matters considered by the Morrow Board were the two very important questions as to whether there should be (*a*) a department of National Defence under which should be grouped all the defence organizations of the Government; or (*b*) a separate department for air co-ordinating the present air services of the Army and Navy.

In leaving the subject of naval aviation it may be remarked that during the hearing of evidence by these committees it was apparent that the United States Navy is strongly opposed to the formation of a unified air force or to losing control of the Fleet Air Service.

Manœuvres.

Early in February, 1926, manœuvres were carried out between the Scouting Fleet and the naval and military defence forces of the Panama Canal. The manœuvres were divided into two parts, the first of which had for its object an attack on the Atlantic side of the Canal, and the second an attack on the Pacific side.

In the first part the enemy consisted of a raiding force represented by the Scouting Fleet, comprising six battleships, eight

cruisers, and six destroyer divisions. No details of the operations were made public, but it appears that the Scouting Fleet approached unimpeded within 30 miles of the defences when they flew off a number of airplanes. These aircraft carried out a successful attack on the air defences of the Canal, and were adjudged to have obtained command of the air in that locality. When this operation was concluded, the second phase of the attack on the Atlantic defences was carried out. In this, the mobile beach defences took the rôle of a hostile force who had succeeded in effecting a landing on the coast and proceeded to assault the defences by land. The result of the operations is reported to have proved the efficiency of the defences as far as they go ; but, at the same time, to have established the fact that the land garrison was insufficient in numbers and that the air defences of the Canal were inadequate to counter an air attack such as a raiding enemy force might be expected to launch against the Canal. It is possible that the manœuvres were staged by the naval and military authorities in order to demonstrate the necessity for increasing the strength of the Canal defences.

After these operations, the Scouting Fleet passed through the Canal and joined the Pacific Battle Fleet for the second part of the manœuvres, which partook more of the nature of high-sea operations, although the objects of the contending forces were again the attack and defence of the Canal. In this phase of the operations the Battle Fleet represented an enemy force, whose objective was an attack on the Pacific end of the Canal. The defenders were represented by the Scouting Fleet, whose object was to intercept the Battle Fleet and bring it to action. At the commencement of the operation the Battle Fleet was somewhere out of touch to the westward, and the Scouting Fleet was spread on a long look-out line some 800 miles long, with a view to intercepting the approach of the raiding battleships.

The approaching Battle Fleet was sighted by the ships of the Scouting Fleet which then retired, concentrating as they did so, until they were in a position to bring the Battle Fleet to action. One of the features of this phase of the manœuvres was the number of destroyer attacks made by the flotillas of the Scouting Fleet during the night after the Battle Fleet had been located.

The Australian Cruise.

Following the manœuvres off Hawaii, a large fleet, consisting of the Seattle, fleet flagship, 10 battleships, 1 division of 4 light cruisers, and 2 destroyer flotillas of 28 boats, accompanied by the destroyer flagship Omaha, together with a large number of fleet auxiliaries, made a highly successful cruise to various ports in Australia and New Zealand. Leaving Pago Pago on July 11, the whole fleet proceeded for Australian waters, where it divided into two main divisions. One division proceeded to Sydney and the other to Melbourne, arriving on July 23. After a stay of about a fortnight, the divisions, leaving their Australian ports of call, proceeded to New Zealand, one division going to Auckland and the

other to Wellington, arriving on August 11. On the 24th, all ships sailed for a rendezvous at sea, from whence they returned to Pago Pago and Hawaii, shortly afterwards dispersing to their home ports.

Apart from the strategical aspects of this cruise, to which reference has already been made, it is said to have had beneficial effects on the officers and men of the ships and also on the recruiting problem, which is always a difficulty in the United States. The conduct of the ships' companies at the ports visited was universally reported upon as exemplary, while hospitality and good feeling were the prominent features displayed by both hosts and guests.

Accidents.

The United States Navy has again been unfortunate in having several accidents, the most serious of which were (*a*) the sinking of Submarine S 51, in September, 1925, with a loss of 34 lives; (*b*) the wreck of the airship Shenandoah, in September, with the loss of 14 lives; and (*c*) the destruction of 17 seaplanes in a storm in Chesapeake Bay, in October, fortunately without loss of life. In each case the courts of inquiry held to investigate the circumstances entirely exonerated the officers concerned. On July 10, 1926, serious loss of life and property occurred when the Naval ammunition depôt at Lake Denmark, near Dover, New Jersey, was totally destroyed by explosions caused by lightning.

JAPAN.

The year 1925–26 was, on the whole, uneventful. Progress with the 1922 building programme has been maintained, and this programme is to be followed by another, the general details of which have now been published. Three cruisers, five destroyers, three submarines, and a mine-sweeper have been completed, while the modernization of the older capital ships has been carried on. When the present (1922) building programme is completed, which should be in March, 1929, the fleet will consist of the following ships of less than ten years old:

6 Battleships.
4 Battle cruisers.
3 Aircraft-carriers.
25 Cruisers.
81 Destroyers.
69 Submarines.

The new building programme put forward by the Navy Department is estimated to cost 325,000,000 yen, and is to be spread over a period of five years, *i.e.* till 1930–31. It is to provide for 4 cruisers, 20 destroyers, 5 special service vessels, and 3 river gunboats.

It is of interest to note that in 1931 Japan is entitled by the Treaty of Washington to lay down one capital ship, followed by another in 1932, and another in 1933. If advantage is taken of these opportunities a very heavy strain will be thrown on her financial resources.

The New Cruisers.

In December, 1925, the Furutaka, the first of the 8-inch-gun cruisers to be completed, commenced her trials. They were not satisfactory, and were repeated in April, 1926. The Haguro and Ashigara, the last of the four 10,000-ton cruisers included in the 1922 programme, were laid down in 1925 at Mitsubishi (Nagasaki) and the Kawasaki (Kobe) yards respectively. It is understood that this class will mount eight 8-inch guns in twin turrets on the centre line. The aircraft-carrier Akagi has been completed, and the Kaga is expected to be ready early in 1927. These vessels were originally intended to be a battle cruiser and a battleship respectively, and were re-designed as aircraft-carriers.

At the end of 1925 the Nachi, the most advanced of the four 10,000-ton cruisers, was severely damaged by an accident. Apparently the gantry supporting two travelling cranes over the vessel collapsed when heavily loaded and, falling on to the vessel from a height of 120 feet, caused grave structural damage. It is reported that the keel of the ship is bent, and extensive reconstruction will be necessary.

Exercises and Manœuvres.

In addition to the work in Chinese waters, the combined fleets carried out exercises and firing practices in Sageki Bay, and combined manœuvres, with land and air forces, took place at all three naval ports—Kure, Yokosuka, and Sasebo. In the general manœuvres in October some 125 ships and a division of troops took part. The general idea of these operations seems to have been that the Japanese Fleet had been partially defeated by an enemy, whose fleet had established itself in the Bonin Isles. The enemy then attempted to blockade the remainder of the Japanese Fleet in Tokio Bay, at the same time landing an invading force at Suraya Bay.

The composition of the 1st and 2nd fleets remains much as before. A flotilla of destroyers has been added to the foreign service squadron (China), and the Training Squadron, which had been reduced to the one ship, the Iwate, has been again increased to two ships, the Yakumo and Idzumo.

The Results of the Earthquake.

The permanent work of reconstructing naval buildings after the earthquake is proceeding but slowly, as the temporary accommodation provided has been found sufficient. In Yokosuka the reconstruction of offices and storerooms is still in hand, but the dredging of the harbour and the reconstruction of the breakwaters, waterworks, and lighthouses is finished.

In May, 1925, the Australian cruiser Brisbane put into Yokosuka, this being the first Australian man-of-war to visit Japan. The ship's crew was most hospitably received, and at a dinner given to the officers by the Minister of the Navy a model of the Ibuki was presented to the ship for the Australian War Memorial, to commemorate

the Ibuki's services during the war in escorting the Australian troops. Other relics of this ship, including the ship's bell and the wheel, were presented to the Brisbane.

The discharge of officers necessitated by the fleet reductions subsequent to the signing of the Washington Treaty has now been carried out, a total of 290 officers of all branches having been retired. As regards the lower deck ratings, there appears to be no lack of volunteers, as might have been expected, in view of the general prosperity following a great war.

FRANCE.

In spite of a rapid succession of governments, French naval policy has been well maintained. During 1925 there were three Ministers of Marine. On the fall of the Heriot Government in April, and on the formation of the Poincaré Cabinet, M. Dumesnil was succeeded by M. Emile Borel, who, although he retained his office on the reorganization resulting on the fall of M. Caillaux, was replaced in October by M. G. Leygues in M. Briand's Cabinet in December. M. Leygues had the advantage of previous experience in the Ministry of Marine.

The naval estimates were presented to the Chamber in October, 1925, for a sum of 1,496 million francs, which showed an increase of 244 million francs over the initial credits votes for 1925. The sum ultimately voted for 1926, however, amounted to 1,433 million francs.

Increased Expenditure.

Although supplementary votes and credits brought the final appropriations for 1925 up to 1,603 million francs, there is no doubt that, when the supplementary credits due to transfer of unexpended balances of the 1925 estimate are made, the final figure voted will show a considerable increase over that for 1925. Moreover, this figure does not include the amount required for the 1926 portion of the second instalment of the Naval Programme, for which a further 11 million francs is asked. The ultimate 1926 appropriations, therefore, will be considerably larger than those for any recent years.

The Naval Statute.

The Bill to establish the Naval Statute has been slightly amended by a Committee of the Chamber, and now provides, briefly, for the following:

1. The composition of the permanent French Fleet, apart from vessels specially allocated to coast defence, will be:
    - 175,000 tons of capital ships.
    - 60,000 tons of aircraft-carriers.
    - 390,000 tons of light surface craft, consisting of:
        - 210,000 tons of cruisers, and
        - 180,000 tons of leaders and destroyers. (All cruisers to be of the maximum tonnage allowed by the Treaty of Washington.)
    - 96,000 tons of submarines.

Special vessels.—1 repair ship, 2 surface minelayers, 2 submarine parent ships, 3 aviation transports, and miscellaneous craft.

2. The following age limits for ships are to be adopted, the period to count from the date of commissioning for trials:

Battleships and aircraft-carriers of less than 10,000 tons . .	17 years.
Leaders and destroyers	15 „
Submarines.	12 „

3. The complements in peace time are to conform to the following regulations:

(*a*) Ships of the High Seas Fleet. At least half of surface vessels and three-fifths of submarines will always be in commission with full crews.

(*b*) Special vessels: Full crews according to requirements, the remainder having reduced crews.

The following table shows the ships under construction:—

Date of Law	18/4/22.	12/4/24.	13/7/25.	Proposed 1926.	30/6/23.	29/4/26.
Cruisers	3	2	1	1	—	—
Flotilla leaders	6	—	3	3	—	—
Destroyers	12	6	4	4	—	—
Submarines	12	2	9	7	—	—
Aircraft-carriers	1*	—	—	—	—	—
„ transport	—	—	1	—	—	—
Minelayers	—	—	1	—	—	—
Training ship	—	—	—	1†	—	—
Oilers	—	—	—	2	—	—
Submarine parent ship . . .	—	—	—	1	—	—
Coast defence submarines . .	—	—	—	—	9	4

The first 10,000-ton cruisers were launched, the Duquesne at Brest on December 17, 1925, and the Tourville at Lorient on August 24, 1926. The third ship, Suffren, was begun at Brest on May 3, 1926.

Naval Air Service.

According to the report of the Senate Finance Commission of the 1926 estimates, the position of the Naval Air Service is as follows:

Lighter than air.—13 non-rigid airships, of which 4 are kept in commission; 19 captive balloons, of which 7 are in commission, and about 50 kite balloons. The only rigid airship, the Mediterranean, is to be dismantled.

Heavier than air.—The number of squadrons now in existence is 13, including the training squadron at Brest. The 12 service squadrons consist of 4 bombing squadrons, 5 seaplane reconnaissance squadrons, 2 fighting squadrons, and 1 special service. Each squadron comprises 12 machines, all of which are of post-war manufacture, with the exception of some of the seaplanes.

As regards future policy, a Bill is at present before Parliament for the reorganization of the Naval Air Service. The main provisions of this Bill are the establishment of fifty aircraft squadrons by 1938. Of these squadrons, thirty-five will be maintained in commission during peace time, the remainder being in reserve.

Naval Manœuvres.

During July, 1925, fleet exercises were carried out on a scale more extensive than in any year since the war. A large number of ships

* The Bearn is expected to be completed by the end of 1926.
† This vessel will be practically a small cruiser.

took part in these exercises, the Mediterranean units coming round into the Atlantic for the purpose.

The general scheme of the combined exercises of the Mediterranean and Channel Fleets was that an enemy force, represented by the battleships and certain light forces of the Mediterranean Fleet, had to seek out and attack the French naval forces, represented by the Channel and North Sea squadrons, in the Gulf of Gascony; the object of the scheme being to test the system of naval defence. This object, however, was only partially attained, as the Home submarines successfully attacked the approaching enemy battle fleet long before it reached the coast and, as a result, it was so much disabled as to be unable to pursue its intended attack on the coast defences, which were in consequence not put to the test. The success of the submarines may have been rendered unduly feasible, owing to the lack of escorting destroyers, and also to the limits of speed enforced on the heavy ships with a view to economizing fuel.

After the manœuvres had been brought to a termination the combined fleets assembled at Cherbourg, where they were inspected by President M. Dumergue on July 15.

Administrative Economies.

Explaining on September 15, 1926, the administrative economies authorized by the Cabinet, M. Leygues said that they involved the abolition of the dockyard at Rochefort. At Lorient, the abolition of the Prefecture Maritime and of the repair shops at the dockyard will result in corresponding economies; but the building yards for new naval construction will be maintained, together with the schools for the study of special problems. Similarly, the services at Gueriny are to be concentrated at Villemenant. The economies affect only the administrative and industrial services of the Navy, added the Minister, and organizations which are out of date. The reforms, he declared, will rejuvenate and strengthen the French Navy.

ITALY.

The Italian naval estimates approved for 1926–27 are for a sum of 1,040 million lira, which at the current rate of exchange is equivalent to about £8,700,000. These estimates show an increase of about 60 million lira on last year's in accordance with the policy, now of some years' standing, of steadily increasing naval expenditure. This increase is clearly indicated by an examination of the sums voted for the Navy during the last five years: 1922–23, 770,000,000 lira; 1923–24, 870,000,000 lira; 1924–25, 978,000,000 lira; 1925–26, 995,000,000 lira; 1926–27, 1,040,000,000 lira. Of the increase voted for the current year, a sum of about £1,500,000 is directly allocated for new construction. In pursuance of the 1923–28 building programme, it is proposed to lay down immediately 4 destroyers and 4 submarines. The vessels at present under construction are 2 cruisers of 10,000 tons (Trento and Trieste), 3 destroyers, 17 submarines, 2 combined minelayers and mine-sweepers, and 1 oiler.

No provision has been made in the estimates for commencing work on any new capital ships in 1927, in accordance with the Washington Treaty. The tendency is to neglect the building of capital ships and cruisers in favour of light craft.

Provision has not yet been made for an aircraft-carrier similar

to those building for other Powers, but the installation of flying-off arrangements in capital ships and cruisers, and the transformation of the G. Miraglia, a merchant ship of 5,000 tons, into a carrier, to some extent meets this need in the Italian Navy. There is no doubt that the increase of Italy's coast-line in Tripoli and Cyrenaica, and the growth of her merchant traffic in recent years, has stimulated a desire generally to strengthen her navy in all departments.

The established *personnel* is the same as for the two preceding years, viz. 45,000 officers and men.

Naval Bases.

The treaty with Yugo-Slavia has enabled Italy to direct her attention from the Adriatic to the western basin of the Mediterranean, and a considerable amount of work is proposed with a view of developing new naval bases in those waters. It is intended, in the first place, to abandon the base in Maddalena Island, on account of its exposure to the fire of long-range guns, which might be established in Corsica, and to establish in its stead a base in Cagliari Bay, on the south side of Sardinia. A new base for light craft is also proposed on the south coast of Sicily.

The Naval Air Service.

Following the establishment in 1923 of a Supreme Commission of Defence, a separate Ministry for Air was created in 1925. This Combined Air Force comprises an independent air force, an army air force, a naval air force, and a colonial air force. Although, under this organization, the Naval Air Service is nominally a department of the combined air force, it is to a great extent independent, being in practice administered and controlled by the Ministry of Marine. The Naval Air Force will consist ultimately of 35 squadrons and 6 airships, formed into 5 wings, one of which will be an airship wing. At the present time, however, its strength is only about half that projected. All pilots serving in the Fleet Air Service will be naval officers, and volunteers have been called for.

Italian Naval Manœuvres.

During July and August, 1925, the greater part of the Italian Fleet assembled off the west coast of Italy for extensive exercises and grand manœuvres. The importance of the manœuvres may be judged from the fact that they were attended personally by the King in the Royal Yacht Savoia, while the President of the Senate was embarked in one of the battleships.

The field of operations was small, being confined to the area between the south end of Italy and the south part of Sardinia, including the whole of Sicily and its surrounding waters. The opposing fleets consisted of the "National," representing the Italian Fleet, supposed to be considerably depleted by the absence of ships on detached service in the Levant, and the "Enemy," representing a rival Mediterranean Power, based on Sardinia and having a preponderance of heavy ships over the "National" Fleet, which,

however, had the advantage of more numerous light craft. The "Enemy" had also transports sufficient for a whole army corps. Both fleets were well equipped with submarines, aircraft, and airships.

The general scheme supposed that the enemy had captured Sardinia and established a base at Cagliari, where he had assembled a large convoy of transports with a view to invading Sicily. This convoy actually consisted of only seven vessels, but each ship represented four transports, making a formidable invading force of twenty-eight transports. The object of the enemy was to convoy its transports into a Sicilian port and there to disembark its troops, while that of the National Fleet was to intercept and frustrate these operations.

The operations, which commenced at midnight on August 24–25, found the Enemy Fleet at anchor in Sardinia, the transports in Cagliari Bay, and the main fleet inside San Antioco Island. The "National" Fleet was at anchor at Port Augusta on the east coast of Sicily with the exception of its light forces, which were already at sea.

The "Enemy" Commander-in-Chief determined on the small undefended port of Termina, a railway junction some 18 miles east of Palermo, as the object of his attack and the scene of the disembarkation of his army, but took steps to make a feint on the south coast of Sicily with the object of, if possible, misleading the "National" Fleet from the real scene of his operations.

The general "Enemy" plan of operations consisted of dividing his transports into two divisions, a fast and slow, so arranging his movements that the fast convoy should arrive at Termina supported by the main fleet twenty-four hours before the slow convoy, who were to leave Cagliari later and proceed direct. The fast convoy and main fleet left their respective bases without delay on the morning of the 25th, and proceeded eastward as fast as possible, keeping well to the northward of the direct course in the hope of keeping out of sight of the "National" patrol vessels. In this, however, they were unsuccessful, both the main fleet and the convoy being sighted soon after daybreak by "National" submarines and aircraft and duly reported. They were also attacked by submarines during the day, but without any admitted casualties.

Having received reports of the main "Enemy" movements, the "National" Commander-in-Chief sailed from Port Augusta in the afternoon, ignoring the feint being made by detached "Enemy" ships on the south coast of Sicily, and passing north through the Straits of Messina turned west at high speed. During the night the "Enemy" fleet and transports were repeatedly attacked by destroyers, but again escaped without loss.

At daybreak on the following morning (26th) all squadrons of both sides, with the exception of the slow division of "enemy" transports, which was a long way to the westward, were concentrating off the north-west corner of Sicily. At 6 a.m. the flotilla leader, Alessandro Poerio, with a division of destroyers entered the port of Termina and, proceeding alongside the harbour wharves, landed a storming party and occupied the place under cover of the guns of the flotilla. Shortly afterwards the main "Enemy" fleet arrived and anchored with the fast convoy of transports. As, however, the transports were proceeding into harbour, the "National" battle fleet hove in sight, about ten miles away to the north-west. On the appearance of the "National" fleet, the "Enemy" began to get under way, but, having been caught at such tactical disadvantage, where he must have been subjected to the devastating fire of a squadron under way, while he himself was at anchor, the result of the engagement could be in no doubt. Under the circumstances, the umpires brought the manœuvres to a close.

Lessons of the Operations.

Exactly how it was that the "Enemy" Commander-in-Chief was unaware of the proximity of the "National" fleet and received no warning of its approach until it was in a position to open fire does not appear: it may, to some extent, be explained by the small number of light craft on the "Enemy" side, to which reference has

already been made. The lesson to be learnt from these operations is very similar to that to be drawn from the Swedish manœuvres, viz. the enormous risks taken by a combatant who endeavours to carry out a landing operation on an enemy's coast before having obtained a reasonable degree of control of the sea.

On the termination of the manœuvres the whole fleet proceeded to Port Augusta, where it was reviewed by H.M. the King.

Accidents.

During the manœuvres in August, the submarine Veniero was lost off Cape Passaro with all hands as the result of a collision with a merchant vessel. The circumstances were similar to those which a few months later led to the deplorable loss of the British submarine M 1 in the English Channel.

OTHER FOREIGN NAVIES.

(*Arranged alphabetically.*)

Argentina.

During last year little progress has been made in naval matters, principally owing to a lack of funds, but the President of the Republic has recently signed a decree authorizing the expenditure of 32,000,000 dollars on new construction. It is reported that this sum is to provide for the purchase of two cruisers, two destroyers, two gunboats, and three submarines, its expenditure being spread over a period of three years.

The battleships Moreno and Rivadavia have been undergoing very extensive refits in the United States, the former vessel having been completed in April, 1926. These battleships, besides being refitted, have been considerably altered and brought up to date. They have been reboilered and fitted to burn oil fuel, and at the same time have had their reciprocating engines removed and sets of Curtis-geared turbines of 30,000 h.p. installed in their place. Modern fire control and electrical equipment has also been installed.

The training ship President Sarmiento is in hand at Messrs. Cammell Laird's yard at Birkenhead, where she was launched in 1897, for reboilering and general refit.

Brazil.

The only increase that has been made in the Brazilian Navy during the last year has been the ordering of a submarine in Italy in October, 1925. The scout-cruisers Bahia and Rio Grande do Sul have been reconditioned at Rio by the Companhia Nacional de Navegacao Costeira, who sublet the contract for the new machinery and boilers to Messrs. Thornycroft & Co., Ltd. The latter replaced the ten original boilers by six Thornycroft boilers, fitted to burn oil only, and the five old direct-coupled turbines with three of the geared type, and of a somewhat higher power. By these changes

VICKERS "VIKING" AMPHIBIAN.

(*As supplied for service on the River Plate.*)

the designed S.H.P. was raised from 18,000 to 20,000; the speed to 27 knots; and the radius of action at 24 knots from 1,500 to 2,400 knots, using about the same weight of fuel. At 10 knots, the radius of action with the old plant was 3,500 knots. It will now, with the same weight of fuel, be 6,600 knots, or about 90 per cent. more.

Chile.

Early in 1926 an advisory staff of five British naval officers and a British air officer went out to Chile at the request of the Chilean Government in order to advise and assist in the technical development of their navy. It is reported that the Chilean Government have decided to embark on a constructional programme at a cost of 430 million pesos (about £11,000,000). This sum is to be expended on the purchase of cruisers, destroyers, and submarines. Some development in the Naval Air Service is proceeding, and a number of naval aircraft have been ordered in Italy.

Denmark.

The Danish Navy, so far from showing any tendency towards further development, seems likely to melt away under the influence of the Disarmament Bill, which is now occupying much attention in Danish political circles. The Minister of Defence himself, on taking office in 1925, stated that he regarded it as his duty to make the War Office and Admiralty as superfluous as possible. The Disarmament Bill, the intention of which is to reduce the Danish Army and Navy to the status of police and patrol forces, was passed through the First House, but thrown out by the Second House. It is expected, nevertheless, that the Bill will be brought forward again at an early date.

Finland.

The total sum voted for all defence purposes in the Finnish Budget was 670,000,000 Finnish marks, equivalent to about £3,500,000. In March, 1925, the Government presented to the Riksdag a Bill for the expenditure of 375,000,000 marks on new construction, to be spread over five years, and to provide 2 gunboats, 2 submarines, 4 motor torpedo boats, 1 training vessel, and a stock of mines, torpedoes, and paravanes.

After prolonged and bitter discussion this programme was reduced to 215,000,000 marks, for the provision of 1 gunboat, 4 submarines, and 4 motor boats; but the Bill was postponed until 1927. The Government then demanded 100,000,000 marks at once in order to start the programme, but only 47,000,000 marks were voted, and no guarantee was given that the balance would be forthcoming next year. This sum the Government refused, so until a new Bill is brought before the Riksdag the Ministry of Defence is unable to do more than obtain tenders for the vessels in the hope of their construction being sanctioned in due course.

Voluntary Service.—During 1925 little progress was made in naval development except by the innovation of voluntary service. Until 1925 the navy was recruited entirely from conscripts, some of whom were allowed to volunteer for further periods of service. Under the new system men between the ages of seventeen and nineteen engage for three years, with the possibility of further service. It is understood that this system has already had a beneficial effect on the service.

In October, 1925, the Finnish Navy suffered a serious loss in the foundering, with all hands, of torpedo boat S 1, an ex-Russian vessel of 260 tons.

Germany.

During 1925 the new cruiser Emden commenced her trials. Her dimensions are: Length 508 feet, displacement 5,600 tons, and speed 27·5 knots. At present she is not properly armed, owing to a difficulty in manufacturing the twin mountings for her guns, and is carrying eight 6-inch guns on single mountings, arranged four on the centre line, and two on each side, together with 4 torpedo tubes. Her final armament will be eight 6-inch guns in twin mountings on the centre line with eight 19·7-inch torpedo tubes. The vessel is remarkable in being fitted with a singular foremast, belled out at the top like a tulip to accommodate the fire control. This design, it was hoped, would give a maximum height of eye with a maximum of stability and absence of vibration. In practice, however, the results have been disappointing, and the height of the mast is being reduced, although the form of the top is to be retained.

Provision for two Cruisers.—A second cruiser has been laid down, similar to the new Emden. The estimates for 1926–27 contain provision for the laying down of two cruisers and six more destroyers. This new construction is authorized by the Treaty of Versailles, where it is laid down that units of the various classes of ships authorized for the German Fleet may be replaced at the end of twenty years in the case of battleships and battle cruisers, and fifteen years in the case of light cruisers and destroyers.

The battleship Schleswig Holstein, after a long and extensive refit, was recommissioned in February, 1926, as flagship, relieving the Braunschweig, which has been paid off into reserve. The principal alterations carried out to the Schleswig Holstein consisted of the removal of the submerged torpedo armament in accordance with the Treaty of Versailles and the installing of four 19·7-inch tubes in the upper deck, also the replacement of the old foremast by a tulip-shaped mast similar to that of the Emden. The destroyer W 102 was launched at Wilhelmshaven in March, 1926, and has been named Mowe. Three others, launched on July 15, 1926, were named the Greif, Albatross, and Seeadler; and two more, on September 22, 1926, the Condor and Falke. They are of 773 tons, 34 knots speed, and carry four 4·1-in. guns and four torpedo tubes. Altogether, six new destroyers have been launched for Germany.

Greece.

The policy of scrapping useless and obsolete ships while pursuing a small but well-considered programme of new construction appears to have been practically lost sight of since the *coup d'état* of General Pangalos. This policy had been put forward by Admiral Sir Richard Webb, and accepted by Admiral Miaoulis, the Minister of Marine, and it was to advise and assist in developing it that the British Naval Mission, under Rear-Admiral C. S. Townsend, went out to Athens in April, 1925. The Mission, however, returned in June, 1926, the Greek Government having announced that they had reluctantly found themselves compelled to cancel their contract on the ground of economy.

Changes in Administration.—Very extensive changes were made in the *personnel* responsible for the administration of the navy shortly after General Pangalos took over control. Admiral Miaoulis and the staff of the Ministry were relieved, as also were a large number of naval officers serving afloat. The principal cause of the neglect to carry the Webb scheme into effect is not, however, due to these changes of *personnel,* but rather to the general financial stringency, which makes new construction practically impossible.

The naval estimates for 1925 for 400,000,000 drachmæ (£1,350,000 approximately) which had been introduced by the late Government had not been passed before it fell, and on the accession of the Pangalos *régime* they were withdrawn. Since then no naval estimates have been published, but it appears that the figures of the original estimates are being used as a basis for carrying on the administration of the navy.

No programme of new construction has been published, but the following work of construction and reconstruction is actually in progress:

Under Construction.—Five submarines of about 600 tons displacement, at the Chantiers de la Loire at Nantes, and one at Schneiders, Harfleur—the Katsonis. Two of these craft, which were ordered in 1924, should be ready shortly.

Reconstruction and Refitting.—Battleships Kilkis and Lemnos are in hand, the work including complete retubing. Cruiser G. Averoff is refitting and reboilering in France. The cruiser Helle is refitting and reboilering, and will be converted into a minelayer. Six destroyers of the Velos and Lonkhi classes are to be refitted, and the six ex-Austrian torpedo boats are also being refitted. The refitting and re-arming of the four destroyers of the Leon class were completed during 1925 by Messrs. White, of Cowes, and Messrs. Vickers.

The Battle Cruiser Salamis.—It is unlikely that the battle cruiser Salamis will be completed. This vessel, of 20,000 tons, was ordered from the Vulcan Works at Stettin, and laid down in 1913; she was to have been completed in 1915. On the outbreak of war, the hull was practically complete and part of the machinery installed; the vessel was launched at the end of 1914 to clear the slip, and no further constructional work was carried on during the war nor, in view of the terms of the Treaty of Versailles, since. Greece has already paid £450,000 for the work done, but the Vulcan Works claim a further £660,000 for the incomplete vessel as she stands, in which condition they wish to hand her over to Greece. Greece, on the other hand, not unnaturally, claims that the contract has been

automatically annulled by non-fulfilment, and desires the refund of the £450,000 already paid, on the receipt of which she would relinquish all claims on the uncompleted vessel. In January, 1925, this dispute was referred to a mixed Arbitration Tribunal, which sat in Paris, whose decision went against Greece. Against this finding the Greek Government have appealed, and the matter is still undecided.

Holland.

During 1925 a proposal was put forward by the Government, in the interests of economy, to divide the Netherlands Navy into two entirely separate services, one for Home Defence, and the other for the Netherlands East Indies. The principal object of this scheme was to put the whole responsibility for the defences of the East Indies into the hands of the Netherlands Colonial Service. The scheme met with considerable opposition, especially on the part of the Navy itself, and has not yet been approved. Major Lambooy, an army officer, on accepting for the second time the double appointment to the Ministries of War and Marine, announced his intention of carrying through the reorganization of the Navy and the amalgamation of the Ministries.

New Construction.—The cruisers Java and Sumatra have both been completed, the former in 1925 and the latter in 1926. The Java, on commissioning, proceeded to the Netherlands East Indies, whither she will be followed this year by her sister ship.

During 1925 four 1,600-ton destroyers of the de Ruyter class were laid down, all of which are expected to be completed in 1927. The gunboat Soemba is complete, and the Flores well advanced. Of the six submarines under construction, the K XI, K XII and O 9 and O 11 have been commissioned, and K XIII and O 10 will be completed shortly.

The 600-ton minelayer was launched in 1925, and will be completed before the end of 1926. No programme of further construction has been published.

Yugo-Slavia.

Although the Minister of War and Marine has declared the necessity of having a sufficient quantity of submarines, destroyers, and C.M.Bs. to protect adequately the coast, no definite programme for either new construction or reconstruction has been published. The most important elements of the Yugo-Slavian Fleet consist of ex-Austrian or ex-German vessels, which fell to her by the Treaty of Versailles. A large proportion of these vessels are fairly modern, three river monitors having been launched in 1915, eight torpedo boats in 1913, and the six mine-sweepers in 1918. These vessels provide a valuable nucleus of efficient light craft, and are being kept in an efficient condition, several of them having been recently refitted. Naval exercises on a small scale were carried out on the Dalmatian coast in August, 1925.

The new gun-vessel Dalmacija, built in Germany, arrived at Cattaro in September, 1926, and was enthusiastically welcomed. A Belgrade message described her as the first cruiser of the Yugo-Slavian Navy.

Latvia.

The Latvian Navy consists at present of one ex-German gunboat, the Virsaitis, a small vessel of 480 tons, carrying three 3-inch guns and two 6-pounders. Additions will be made to the navy shortly in the form of two mine-sweepers, the Viersturs and Imanta, and two small submarines, the Rouis and Spinandola, at present approaching completion at Nantes and Le Havre.

Norway.

Progress in the Norwegian Navy during the year has been confined to the construction of four B class submarines. B 3 and B 4 are slowly completing, and are expected to be ready in 1927; B 5 and B 6 were only laid down at the end of 1925, the Norwegian Storthing having voted Kr. 300,000 towards their construction, partly with the object of providing employment in the naval yard at Horten. These submarines are small boats of 420 tons surface displacement, and will be armed with six 18-inch torpedoes and one 12-pounder gun. The Navál Flying Service remains part of the navy, and it is improbable that the idea of a separate air force will be brought forward again.

Proposals for a further small building programme have been under the consideration of a special committee of the Storthing, but their proposals have proved unacceptable to the naval authorities, who have been directed to prepare a fresh scheme.

Peru.

The two submarines building for Peru in the United States are approaching completion, the first having been launched in April, 1925. As far as is known no other new construction is projected.

Portugal.

No statistics have been published for the current year, but for 1925–26 a sum equivalent to about £1,216,000 was voted. This sum shows an increase in naval expenditure over recent years. Three gunboats, which were laid down as long ago as 1919, are still under construction at Lisbon. They are only small vessels of 400 tons displacement, and will carry an armament of two 3-inch guns. No other construction is in hand or approved.

Roumania.

The Roumanian programme is a double one, and although it has the approval of the naval and military authorities, has not yet been accepted by the Government, and in view of the financial difficulties it may be considerably reduced. The first part of the programme is

for a course of construction extending over four years. This is to be followed by an "extension programme," lasting a further ten years. The whole programme would cost some £12,000,000.

Four Years' Programme.—(i) New construction: 1 cruiser, 2 destroyers, 2 submarines and 4 motor launches. (ii) The complete rearmament of the two flotilla leaders Marasti and Maraseti, each with five 4·7-inch guns and 21-inch torpedoes. (iii) The creation of a naval port in the Black Sea.

Ten Years' Programme.—New construction: 3 cruisers, 16 destroyers, 18 submarines.

The destroyer leaders Marasti and Maraseti are already undergoing an extensive refit, including reboilering. The work has been carried out by Swiss, Italian, and British firms.

Russia.

Exercises were again carried out during the summer of 1926, as during the previous year, by the Soviet Fleet in the Baltic. M. Kameneff, Inspector of the Red Army, took part in a cruise off the coast of Esthonia on board the Marat (ex-Petropavlovsk). The Soviet authorities attached some importance to the operations, and issued special bulletins reporting the progress of the mimic "attack on Leningrad." At special meetings of factory workers, the significance of the exercises was explained.

Siam.

The new gunboat Ratnakosindr, ordered in England, was completed at Newcastle in the autumn of 1925 and sailed for Siam. This vessel, though only of 918 tons displacement, carries two 6-inch and four 3-inch (H.A.) guns.

Spain.

Some progress was made in new construction. The small cruiser Don Blas Lezo was completed and the two larger vessels, the Principe Alfonso and the Almirante Cervera, were launched. The dimensions and details of these vessels are:

	Tons.	*Knots.*	*Length.*	*Guns.*	*Torpedoes.*
P. Alfonso, A. Cervera .	7,850	33	579 feet	eight 6-inch	4 triple 21-in. tubes
D. Blas Lezo .	4,650	29	462 feet	six 6-inch	4 triple 21-in. tubes

The three new flotilla leaders, Churruca, Alcala Galiano, and Sanchez Barcaiztegui, are progressing, the first named having been launched. Six submarines of 900 tons displacement are under construction; several of these, however, were launched before 1925. It is announced that more submarines will be included in a new building programme. In the meantime, in order to provide work for the dockyard at Ferrol, a Royal Decree of March, 1926, has authorized the laying down of a new cruiser of the Principe Alfonso type, and three flotilla leaders of the Churruca type at Cartagena. The amount estimated for the year 1925–26 for naval expenditure was equivalent to approximately £6,000,000.

Sweden.

The 1924 Defence Act was brought in again in 1925 as a new Bill, and became law. It lays down the disposition of the fleet, and the life of the various classes of ships. Coast defence ships are to remain twenty years in the Coastal Fleet and ten years in the Local Defence Force—thirty years altogether. Cruisers are to remain twenty years in the Coastal Fleet and ten years in the Local Defence Force—thirty years altogether. In the case of destroyers and torpedo boats, the respective figures are sixteen years in Coastal Defence Fleet and eight years in Local Defence Force—twenty-four years altogether; and submarines, twelve years in Coastal Fleet and six years in Local Defence Force—eighteen years altogether. The Minister of Defence has appointed a committee to consider and report in 1927 what replacement programme should be undertaken when the present building programme is complete.

The scheme for the organization of the Fleet is as follows:

Coastal Fleet.—4 armoured ships, 1 armoured cruiser, 1 minelayer, 3 torpedo cruisers, 8 destroyers, 8 torpedo boats, 7 submarines, 3 depôt ships, 7 vedette boats.

Local Defence Force.—3 armoured ships, 12 torpedo boats, 4 C.M.Bs., 10 submarines, 2 depôt ships, 6 vedette boats.

Reserve.—3 armoured ships, 2 destroyers, 7 torpedo boats, 2 depôt ships, 9 vedette boats, 1 hospital ship, 4 training ships, 1 depôt hulk.

The new construction in hand includes: 1 submarine minelayer (the Valent) under the 1921 programme, and under the 1924 programme 2 destroyers (Nils Ehrenskold and O. H. Nordenskjold), 2 torpedo submarines (Draken and Grifen), and 2 C.M.Bs. The Valen is now doing her trials, and the two C.M.Bs., which were built in England by Messrs. Thornycroft, have been delivered.

Under the 1925 Defence Law, a separate Flying Service is to be created with naval and military wings, the head of the Service being either an admiral or a general. Although the Flying Service is already in process of development, it will not be completely formed until the year 1930–31.

Naval Manœuvres.—Manœuvres were carried out in the Baltic in August, 1925, on a far more extensive scale than had been attempted since 1913. Practically the whole fleet and reserves were mobilized for the operations. The general scheme of the first series of operations was as follows:

The Blue Fleet, representing the defenders, was established in a base in the Gulf of Pampas in the Blue territory, which extended for some 140 miles down the south-east coast of Sweden from Trosa to Kalmar, and included the island of Gothland. The Red, or enemy, fleet was established in the Red territory, which lay in the Gulf of Bothnia, the Red base being at Hudiksvall, north of the Island of Aland. Red's objective was to effect a landing on Blue territory and then retire with his transports, avoiding, if possible, action with the Blue main fleet. Blue's objective was naturally the destruction of the transports before they could be convoyed to Blue territory. The Red Fleet was obviously more powerful than the Blue or

defending fleet, but had the responsibility of carrying out the difficult operation of convoying troops to a port on the enemy's coast.

At the commencement of the operations on August 12, the two fleets were lying at their respective bases with submarine patrols out off the enemy coasts. During the day of the 13th the Red Fleet moved down to Arholm in the Åland Sea and the same night proceeded south into the open waters.

The Blue Commander-in-Chief received news of these movements from his submarine patrols, and put to sea during the night of the 13th–14th, and off the island of Gotska Sandon was able to force Red to accept action. During this action Red became separated from his transports, which were immediately attacked by the Blue light forces and adjudged sunk. Nightfall brought this phase of the manœuvres to an end.

The result of this operation clearly demonstrated again the well-recognized fact that it is extremely hazardous for a fleet, even relatively stronger than the defending fleet, to attempt a landing operation of this nature until a reasonable degree of control of the sea had been secured. The Italian naval manœuvres carried out near Sicily emphasized the same truth.

The operations concluded with the fleet action, and although the Red Fleet and transports had not reached their objective, it was held by the umpires that they were in a most favourable position for doing so.

Turkey.

During the year considerable attention was paid to improving the Turkish Navy. Destroyers and submarines are to be constructed, and the Navy is to be purged of a number of old and useless vessels, and it seems that the Yavouz Sultan Selim (ex-Goeben) is at last to be taken in hand for refit. The total sum voted for the naval estimates for the year 1926–27 is £T.8,093,000 (equivalent to about £900,000). Included in this sum is some £T.3,000,000 for new construction, voted under a special law of April 5, 1925. The expenditure authorized under this law is to be spread over five years, and will be devoted to new construction and repair, the credit being raised by extraordinary revenue, *i.e.* the sale of old ships, war material, and stores.

New Construction Orders.—No definite programme seems to have been decided upon, but two submarines of 750 tons are now under construction at Rotterdam, while a third is to be laid down in the same yard. At the same time, tenders are being obtained for three to five destroyers of 1,300 to 1,500 tons, with a speed of 36 knots, as well as a small number of 20-knot minelayers; but, as far as is known, none of these vessels has yet been definitely ordered.

A sum of £T.3,000,000 has also been set apart for the repairs of the battle cruiser Yavouz Sultan Selin, which is to be docked as soon as the new Ismid floating dock is ready. This ship must be in a very bad condition after so many years of neglect.

Sale of Old Ships.—The following vessels, which have no naval value, are to be sold for breaking up to an Italian firm, who are also considering a contract for raising the Turkish and enemy ships sunk in the Dardanelles and other Turkish territorial waters during the war:

Depôt ships, Nedjmi, Shevket; destroyers, Novmovni I. Hamizet, Berk-efshan, and Sultan Hissar; torpedo boats, Drach, Mosul, and

Ak Hissar; gunboats, Aidin Reis, Burack Reis, Sakiz, Prevese, and Malatia.

Of the remainder of the Turkish Navy, it appears that the only ships in commission or in a sea-going condition are the following:

Battleship (1891), Torghod Reis; cruisers (1904), Hamidieh, Medjidieh; destroyer (1907), Tashoz; torpedo boat (1904), Younnous; gunboat (1907), Peik i Shevket.

Naval Bases.—Ismid is to be developed as the principal naval base, and plans for the construction of quays and workshops have been prepared, together with a scheme of defence by artillery and minefields for the protection of the Gulf. A contract has been given to the firm of Flinder & Co., of Lubeck, for the supply of a 20,000-ton floating dock for the base at Ismid, which will be capable of accommodating the Yavouz, when it is ready. It is understood, however, that the firm are experiencing difficulties in carrying out this contract, as some reduction of the cost provisionally agreed upon has been demanded which has led to complications. The port of Ismid will provide headquarters for ships operating in the Sea of Marmora. Other bases are to be maintained at Smyrna for the Mediterranean, and at Amasra for the Black Sea.

The Turkish Air Force comprises both the military and naval air services. Two naval air schools have been established, one at Constantinople and the other at Trebizond, and a number of Italian seaplanes and French aeroplanes purchased. In 1925 a certain sum was voted for the construction of an aeroplane factory.

H. L. Hitchins,
Com. R.N.

CHAPTER III.

Comparative Naval Strength.

Owing to the influence of the Washington Treaty, there has been no change in the relative strength of the battle fleets of the leading naval Powers. There will, indeed, be no capital ships building anywhere when the British vessels, Nelson and Rodney, pass into commission about the middle of 1927. Activity is at present confined to cruisers and other auxiliary craft.

There is a widespread impression that an unusually large number of cruisers is now being built. It has been suggested that the race in armaments has only been diverted by the Washington Treaty from capital ships to cruisers, and that the taxpayers of the chief maritime nations are little or no better off than they would have been if the Washington Conference had not been held. Such views spring from a complete misconception. As will be seen from the tables which follow, there is no foundation for the belief that the contest in capital ships has given place to a contest in cruisers. What is taking place is merely the carrying out of replacement programmes, new cruisers being built to take the place of vessels which have become, or are becoming, obsolete. So far as the British Empire is concerned, construction is not even keeping pace with the scrapping policy. At the end of the war there were either in commission or paid off 104 cruisers; that number has now been reduced to 63, of which 11 are building and 3 are to be commenced shortly. The American and Japanese naval authorities are also barely making good the vessels which are approaching the end of their effective service. The cruiser tonnage in the case of these two countries for vessels built, building, and authorized remains as stated in the last issue of the "Annual," while in the case of France the total has been reduced slightly, and for Italy the tonnage of the vessels built and building remains the same, and 3 cruisers are projected. There is a slight increase in the case of Germany, but it is inconsiderable. Contrary to popular belief, which has found expression in all parts of the world, there is no evidence that the leading naval Powers are taking advantage of the Treaty to lay down an unusual number of cruising ships.

It is, however, true that the new cruisers are almost without exception of greater displacement and greater fighting power than those which are being replaced. These developments are, however, in accordance with the invariable tendency in naval armaments, and would probably have occurred if no Conference had taken place at Washington.

Building of Destroyers and Submarines.

There is, on the other hand, testimony that increased attention is being devoted to the construction of flotilla leaders and destroyers, as well as submarines. The table below compares the present standing of principal fleets in these respects with that revealed in last year's "Annual":

—	Flotilla Leaders and Destroyers.			Submarines.		
	Built.	Building, Authorized or Projected.	Total.	Built.	Building, Authorized or Projected.	Total.
British Empire 1926 . .	191	9	200	56	9	65
1925 . .	207*	2	209	63	6	69
United States 1926 . .	309	12	321	121	7	128
1925 . .	299	12	311	121	12	133
Japan . . 1926 . .	91	33	124	60	24	84
1925 . .	109	15	124	51	28	79
France . . 1926 . .	73	39	112	64	54	118
1925 . .	73	39	112	53	52	105
Italy . . 1926 . .	76	11	87	47	15	62
1925 . .	63	24	87	43	20	63

* Eighteen of these vessels were on the sale list.

As the chapter devoted to the progress of foreign navies shows, a number of the lesser naval Powers are also either actually engaged in the construction of destroyers and submarines, or have programmes under consideration.

The Editors.

TABLE I.—EFFECTIVE FIGHTING SHIPS, BUILT AND BUILDING.

Class.	British Empire.			U.S.A.			Japan.			France.			Italy.			Russia.			Germany.		
	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.
Battleships, 14-in. guns and upwards	10	2	12	14	—	14	6	—	6	—	—	—	—	—	—	—	—	—	—	—	—
Battle-cruisers, 14-in. guns and upwards	3	—	3	—	—	—	4	—	4	—	—	—	—	—	—	—	—	—	—	—	—
Battleships, smaller guns	8	—	8	4	—	4	—	—	—	9	—	9	7	—	7	5	1	6§	8	—	8
Battle-cruisers, smaller guns	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Aircraft-carriers and aircraft tenders	6	3	9	2	2	4	2	3	5	—	2	2	1	—	1	1	—	1	—	—	—
Cruisers	49	{11, 3†}	63	32	{2, 6†}	40	33	{6, 4*}	43	13	{3, 1†, 2*}	19	13	{2, 3*}	18	7	4‡	11§	8	{1, 2*}	11
Flotilla Leaders and Destroyers	191	9*	200	309	12†	321	91	{13, 4†, 16*}	124	73	{13, 7†, 19*}	112	76	{3, 4†, 4*}	87	82	24	106§	16	{6, 6*}	28
Submarines	56	{3, 6†}	65	121	{3, 4†}	128	60	{6, 13†, 5*}	84	64	{15, 7†, 32*}	118	47	{7, 4†, 4*}	62	23	3	26§	—	—	—

* Projected.
† Authorized.
‡ May be broken up for scrap.
§ It is very improbable that the vessels building will be completed. The military value of many of these vessels is small.

TABLE II.—BATTLESHIPS WITH 14-IN. GUNS AND UPWARDS.

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.
		tons.			tons.			tons.												
1925	*Nelson*	35,000	1921	Colorado		1920	Mutsu ...	33,800												
1925	*Rodney*		1921	West Virginia	32,600	1919	Nagato ...													
1915	Malaya		1920	Maryland ...		1917	Hyuga ...	31,260												
1914	Valiant		1919	Tennessee ...	32,300	1916	Ise													
1914	Barham	27,500	1919	California ...		1915	Yamashiro	30,600												
1913	Queen Elizabeth		1917	Idaho		1914	Fuso													
1913	Warspite		1917	New Mexico ...	32,000															
1915	Royal Sovereign		1917	Mississippi ...																
1914	Royal Oak ...		1915	Arizona	31,400															
1915	Revenge ...	25,750	1915	Pennsylvania																
1916	Resolution ...		1914	Oklahoma ...	27,500															
1916	Ramillies ...		1914	Nevada																
			1912	Texas	27,000															
			1912	New York ...																
	12 ships.	336,250		14 ships.	430,200		6 ships.	191,320												

TABLE III.—BATTLE-CRUISERS WITH 14-IN. GUNS AND UPWARDS.

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.
		tons.						tons.												
1918	Hood...	41,200				1913	Kirishima													
1916	Renown	26,500				1913	Haruna	27,500												
1916	Repulse					1912	Hiyei ...													
						1912	Kongo ...													
	3 ships.	94,200					4 ships	110,000												

NOTE.—Vessels of which the names are printed in italics are under construction.

TABLE IV.—BATTLESHIPS WITH SMALLER GUNS.

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.
		tons.			tons.						tons.			tons.			tons.			tons.
1913	Benbow		1911	Arkansas	26,000				1913	Bretagne		1913	Andrea Doria	22,562	1914	General Alexieff	2,600	1905	Hannover ...	
1913	Emperor of India	25,000	1911	Wyoming					1913	Lorraine...	23,177	1913	Caio Duilio ...		1911	Pariskaia Kommuna		1906	Schleswig-Holstein	13,200
1912	Marlborough ...		1910	Florida ...	21,825				1913	Provence		1911	Conte di Cavour	22,023	1911	Marat ...	23,000	1906	Schlesien ...	
1912	Iron Duke		1909	Utah ...					1911	Courbet ...		1911	Giulio Cesare		1911	Poltava ...		1902	Braunschweig	
1912	Ajax †								1911	Jean Bart	23,095	1910	Dante Alighieri	19,190	1911	Gangut ...		1903	Preussen ...	13,000
1911	Centurion * ...	23,000							1912	Paris ..		1907	Roma	12,655	1916	Demokratiya ... (building)	27,300	1903	Hessen ...	
1911	King George V. †								1909	Diderot ...	18,560	1905	Napoli					1903	Elsass ...	
1911	Thunderer † ...	22,500							1909	Condorcet	18,600							1904	Lothringen	
									1909	Voltaire...	18,500									
	8 ships.	191,500		4 ships.	95,650					9 ships.	194,476		7 ships.	133,670		6 ships.	141,900		8 ships.	104,600

* Being converted to Fleet Target Ship. † Will shortly be placed on sale list.

TABLE V.—BATTLE-CRUISERS WITH SMALLER GUNS.

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.
		tons.																		
1913	Tiger	28,500																		
	1 ship.	28,500																		

TABLE VI.—AIRCRAFT-CARRIERS AND AIRCRAFT TENDERS.

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.	Launched.	Name.	Displace-ment.
		tons.			tons.			tons.			tons.			tons.			tons.			
1916	Furious ...	19,100	Con-verted	Langley	12,700	1920	*Notoro* ‡	—	1920	Béarn † ...	21,400	1923	Miraglia	5,000		Orlitza ...	3000			
1917	Argus ...	14,450		(formerly collier Jupiter)		1921	Hosho ...	9,500		*Commandant Teste*	10,000									
1917	Pegasus	3,070	1921			—	Waka-miya	5,870												
1914	Ark Royal	7,080	Do.	Wright	11,000															
1919	Hermes ...	10,950		*Lexington* *	} 33,000	1925	*Akagi* *	33,000												
1918	Eagle ...	22,790		*Saratoga* *			*Kaga* †	27,000												
1916	*Courageous*	18,600																		
1916	*Glorious*	18,600																		
	Australian seaplane carrier	6,000																		
	9 ships.	120,640		4 ships.	89,700		4 ships.	68,970		2 ships.	31,400		1 ship.	5,000		1 ship.	3,000		Nil	—

* Designed as battle-cruisers; being converted to aircraft-carriers under the Washington Treaty.
† Designed as a battleship.
‡ Being converted from an oiler.

NOTE.—Vessels of which the names are printed in italics are under construction.

N.B.—An aircraft-carrier is defined by the Washington Treaty as: A vessel of war with a displacement in excess of 10,000 tons *standard displacement* designed for the specific and exclusive purpose of carrying aircraft. It must be so constructed that aircraft can be *launched therefrom and landed thereon*. Limitations for armament are also laid down.

TABLE VII.—CRUISERS (continued on next page).

BRITISH EMPIRE.

Speed.	Name.	Displacement.
kts.		tons.
	2 authorized ...	10,000
	1 authorized ...	8,000
	London	
	Devonshire ...	10,000
	Shropshire ...	
	Sussex	
	Berwick... ...	
	Cornwall ...	
	Kent	10,000
	Suffolk	
	Cumberland...	
	Australia * ...	10,000
	Canberra * ...	
33	Emerald ...	7,550
33	Enterprise ...	
30	Effingham ...	
30	Frobisher ...	9,750
30	Hawkins ...	
29	Despatch ...	4,765
29	Diomede (N.Z.)	
29	Durban	
29	Delhi	
29	Dunedin (N.Z.)	4,650
29	Danae	
29	Dauntless ...	
29	Dragon	
29	Capetown ...	
29	Cairo	
29	Calcutta	
29	Carlisle	
29	Colombo... ...	4,190
29	Cardiff	
29	Coventry ...	
29	Curlew	
29	Ceres	
29	Curacoa	

UNITED STATES.

Speed.	Name.	Displacement.
kts.		tons.
35	Omaha ...	
35	Milwaukee	
35	Cincinnati ...	
35	Raleigh ...	
35	Detroit ...	7,500
35	Richmond ...	
35	Concord ...	
35	Trenton ...	
35	Marblehead	
35	Memphis ...	
24	Chester ...	
24	Birmingham	3,750
24	Salem	
21	Olympia ...	6,000
20	Albany ...	3,430
20	New Orleans	3,430
16½	Galveston ...	
16½	Chattanooga	
16½	Denver ...	3,200
16½	Des Moines	
16½	Cleveland ...	
21	Rochester ...	8,150
22	Charlotte	
22	Missoula	14,500
22	Seattle	
22	St. Louis	9,700
22	Charleston	
22	Huron	
22	Frederick	
22	Pittsburg	13,680
22	Pueblo	
22	Huntington	

JAPAN.

Speed.	Name.	Displacement.
kts.		tons.
33	Naka	
33	Sendai ...	
33	Jindzu ...	
33	Nagara ...	
33	Kinu	5,570
33	Abukuma ...	
33	Natori ...	
33	Isudzu ...	
33	Yura	
33	Kuma... ...	
33	Tama	
33	Kitakami ...	5,500
33	Kiso	
33	Oh-I	
33	Yubari ...	3,100
33	Tenryu ...	3,500
33	Tatsuta ...	
26	Yahagi ...	
26	Hirado ...	4,950
26	Chikuma ...	
23	Tone	4,100
20	Nisshin ...	7,628
20	Kasuga ...	
20¾	Iwate	9,750
20¾	Idzumo ...	
20½	Yakumo ...	9,646
20	Adzuma ...	9,307
21¼	Asama ...	9,700
20	Tsushima ...	3 420
22½	Chitose ...	4,992
19½	Akashi ...	2,800

FRANCE.

Speed.	Name.	Displacement.
kts.		tons.
27¼	Metz ... ... (ex Konigsberg)	6,100
28¾	Mulhouse ... ... (ex Stralsund)	5,120
27	Strasbourg ... (ex Regensburg)	4,900
27	Thionville ... ... (ex Novara)	3,500
23	Waldeck Rousseau	13,828
23	Edgar Quinet ...	
23	Ernest Renan ...	13,500
22	Jules Michelet...	
22	Victor Hugo ...	12,400
22	Jules Ferry ...	
34	Duguay-Trouin	
34	La Motte Picquet	8,000
34	Primauguet ...	
34	*Tourville*	10,000
34	*Duquesne*	
34	*Suffren*	10,000
	1 authorized ...	10,000
	2 projected ...	10,000

ITALY.

Speed.	Name.	Displacement.
kts.		tons.
28¼	Taranto ... ... (ex Strassburg)	4,480
28	Marsala	3,600
28	Nino Bixio ...	
28	Quarto	3,220
27¼	Ancona ... ... (ex Graudenz)	4,842
27¼	Bari ... ... (ex Pillau)	4,320
27	Brindisi ... ... (ex Helgoland)	3,440
27	Venezia ... ... (ex Saida)	
22	Libia...	4,000
17	Campania ...	2,444
22¼	San Giorgio ...	10,800
23	San Marco ...	10,000
23	Pisa	10,600
36	*Trento* ...	10,000
36	*Trieste* ...	
	3 projected ...	—

RUSSIA.

Speed.	Name.	Displacement.
kts.		tons.
29¼	Sovnarkom	6,800
29¼	Chevonaya-ukrainia...	7,600
23	General Kornilov	6,675
23	Komintern	
29½	*Lazarev* ...	7,600
21	Profintern ...	15,190
19	Almaz ...	3,300
20	Aurora ...	6,730
29·5	*Admirals-Butakov* ...	6,800
29·5	*Grieg* ...	
29·5	*Spiraidov*	

GERMANY.

Speed.	Name.	Displacement.
kts.		tons.
22	Berlin ...	3,250
22	Hamburg ...	
21	Arkona ...	2,700
21	Medusa ...	
21	Amazone ...	
21	Thetis... ...	2,650
21	Nymphe ...	
21	Niobe	
27½	Emden ...	5,600
27½	B	6,000
	2 projected ...	—

* Building for the Commonwealth Government.

TABLE VII.—CRUISERS (*continued*).

BRITISH EMPIRE.			UNITED STATES.			JAPAN.			FRANCE.			ITALY.			RUSSIA.			GERMANY.		
Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.
kts.		tons.	kts.		tons.	kts		tons.	kts.		tons.	kts.		tons.	kts.		tons.	kts		tons.
29	Caledon	4,120		*Salt Lake*		33	Kako													
29	Calypso	4,120	33	*City* ...	10,000	33	Furutaka ...													
29	Caradoc ...			*Pensacola* .	10,000	33	*Kinugasa* ...	7,100												
29	Concord			Six author-		33	*Aoba*													
29	Centaur			ized to be		33·5	*Nachi*													
29	Cambrian ...			laid down		33·5	*Myoko*... ...	10,000												
29	Canterbury ..	3,750		before		33·5	*Ashigara* ...													
29	Constance ...			July 1927 .	10,000	33·5	*Haguro* ...	10,000												
29	Castor						4 projected	10,100												
29	Champion ...																			
29	Calliope																			
29	Comus	3,750																		
29	Conquest ...																			
29	Carysfort ..																			
29	Cleopatra ...																			
29	Aurora (C) ...	3,500																		
28¾	Vindictive ..	9,750																		
25½	Birmingham...	5,440																		
25½	Lowestoft ...																			
25½	Adelaide (A)...	5,550																		
25½	Yarmouth ...																			
25½	Dartmouth ...	5,250																		
25½	Weymouth ...																			
25½	Brisbane (A)...																			
25½	Sydney (A) ...	5,400																		
25½	Melbourne (A)													3 projected.	—					2 projected.	—
	63 ships.	380,670		40 ships.	334,560		43 ships.	289,701		19 ships.	181,976		15 ships.	88,786		11 ships.	80,970		9 ships.	31,800

(A) Australian Navy. (C) Canadian Navy. (N.Z.) New Zealand Government.

NOTE.—Vessels of which the names are printed in italics are under construction.

CHAPTER IV.

Distribution of the World's Fleets.

There is little need for any textual description of the accompanying tables, which are, in themselves perfectly clear. In the Mediterranean and the Eastern Atlantic, the British squadrons are more powerful, both in numbers and in composition, than those of any single foreign navy. The Two-Power Standard in Europe might, indeed, be said to be maintained owing, not to the strength of the British squadrons, but to the weakness, due in large measure to the influence of the Great War, of the navies of France and Italy, the reduction of the German forces under the Peace Treaty, and to the elimination of the navies of Russia and Austro-Hungary. In the outer oceans, foreign navies predominate. In the West Indies, the United States forces are composed of the powerful Scouting Fleet, the light forces of which alone outnumber the five British light cruisers stationed there. In the Western Pacific Japan predominates, and in the Eastern the United States.

Great Britain's policy of concentration, it will be seen, has been adopted by the other naval powers of the world. Neither the United States nor Japan is attempting to maintain outlying squadrons of any considerable strength. Each of the three great navies is more or less massed in its own waters, though Malta is further removed from Great Britain than any other foreign base from its homeland. This distribution of naval strength might be regarded as a sort of strategical echo of the Washington Conference. According to President Coolidge, the animating principle of the scheme of limitation was that modern fleets should be so restricted in numbers that no Power should be able to carry offensive operations into another's waters. Concentration in what may be broadly described as "home waters" is obviously the first corollary to the principle. President Coolidge's theory is one that would lend itself to discussion with interesting results.

The British Concentration.

The present distribution of British naval forces cannot be explained solely by the general principles of the Washington Conference. In the first place, British naval concentration in Europe began many years before the Washington Conference was thought of, and in the second, the waters round the British Dominions, Colonies and Protectorates are home waters in the strictest sense of the word. These remarks should be elaborated if the present

distribution of British naval forces is to be fully understood. Their massing in the Western Atlantic and the Mediterranean is a legacy of Lord Fisher's policy. The great concentration with which Lord Fisher will always be associated was, it is true, made against a country which had to be regarded as a probable opponent, whereas to-day, no Power inside or outside Europe is even a potential rival to the British Fleet. None the less, the extraordinary rapidity with which the diplomatic crisis of July 1914 arose, and the sudden transition of Europe from peace to war, has made it axiomatic that large British naval forces shall always be stationed in European waters. They are an insurance against a sudden political crisis which might be turned to British disadvantage.

There is, however, another great point of difference between pre- and post-war naval dispositions. In 1914, the partial evacuation of distant waters was rendered easy by existing alliances. The Anglo-Japanese Treaty provided that if Great Britain were attacked in Eastern waters, she could count on Japanese naval assistance. The Anglo-French naval agreement made it safe to reduce the British naval forces in the Mediterranean. The present naval concentration in Europe must be considered by itself, in that British interests in outlying oceans are now protected by no alliance or understanding.

The Influence of Bases.

The distribution of the British Fleet cannot, however, be considered solely in the light of comparative tables. A table shows only how the fleet is actually distributed at a given date : it cannot show the points on the earth's surface at which it could be assembled if the need arose, or the oceans in the world in which it could operate in force. It might, indeed, be possible to describe the feasible redistributions of fleets in tabular form, but the subject is more easily treated in another way. The question of possible redistribution is inseparably connected with the question of bases. A modern fleet's mobility is no longer measurable solely in terms of coal endurance and radius of action ; these figures measure its power of movement, but not its power of operating in a particular zone. This can only be assessed by reference to docks, repair stations, and fortified anchorages, or, in other words, to repair and operating bases. Any sea or ocean which lacks the bases necessary for a modern fleet, is as much closed to its operations as though it were a *mare clausum*, protected by impassable fortifications.

Although steam propulsion and machinery have restricted the mobility of all fleets in the world by making their operation conditional upon bases, these restrictions, and in particular the increase in the displacement of the capital ship and the appearance of the large aircraft carrier, have acted more adversely against Great Britain than perhaps against any naval Power. Even though the political position allows, and indeed commands, a general concentration in European waters (Malta being in a sense the strategic junction of the British Empire, world-wide in its character), it is

obvious that no Dominion, Colony or Protectorate should ever be severed from British naval assistance because the facilities for operating in its waters do not exist, and yet the actual position to-day is far from satisfying this essential *desideratum*. It is doubtful whether any big fleet concentration could be made by the British Admiralty anywhere east of Suez, until the base at Singapore has been developed; and it is almost as doubtful whether a large modern fleet could be maintained in or near the British West Indies, where the United States flag is shown in such commanding strength.

It should be added, in conclusion, that the Washington Treaty, which includes Hong Kong amongst the ports where base facilities and fortifications were not to be renewed and brought up to date, has placed a special restriction upon the operating powers of the British Fleet.

THE EDITORS.

MEDITERRANEAN.

Great Britain.		France.	Italy.	Russia (Black Sea).
Battleships:	Warspite Barham Malaya Valiant Resolution Royal Oak	Provence Bretagne Lorraine Paris Jean Bart Courbet	C. di Cavour A. Doria C. Alighieri C. Duilio G. Cesare	
Cruisers:	Frobisher Danæ Dauntless Dragon Melbourne Cardiff Calypso Caradoc Ceres Concord	Metz Strasbourg Mulhouse	Ancona Brindisi Venezia Bari Rossarol Marsala Nino Bixio Pantera * Tigere * Leone *	Komintern Chervonaya-Ukrainia
Aircraft-Carriers:	Eagle Hermes	— —	— —	— —
Destroyers:	Coventry (cruiser) Montrose * Stuart * Keppel * Broke * and 32 boats	Tigre * Panthère * Jaguar * Amiral Sénès * and 18 boats	Quarto (cruiser) Mirabello * Aquila * Falco * and 24 boats	6 boats
Submarines:	6 boats	9 boats (Toulon) 6 boats (Bizerta)	42 boats	5 boats.

* Leaders.

ATLANTIC, CHANNEL AND NORTH SEA.

	Great Britain.	United States.	France.	Germany.
	Atlantic Fleet	*Scouting Fleet*		
Battleships:	Revenge Ramillies Royal Sovereign Iron Duke ‡ Benbow ‡ Marlborough ‡ Emperor of India ‡	Wyoming Arkansas New York Utah Florida Texas	Voltaire Condorcet Diderot	Schleswig-Holstein Hannover Schliesen Braunschweig
Battle-Cruisers:	Hood Repulse	—	—	—
Cruisers:	Curacoa Caledon Cleopatra Comus	Richmond Marblehead Trenton Detroit Milwaukee Raleigh Cincinnati	Léopard Lynx * Chacal *	Hamburg Arkona Amazone Emden
Aircraft-Carrier:	Furious	Wright †		
Destroyers:	Centaur (cruiser) Wallace * Campbell * Mackay * Bruce *, and 24 boats	Concord (cruiser) and 36 boats.	Lestin,* with 18 boats.	11 boats
Submarines:	5 boats	31 boats	15 boats	—
	N. America and W. Indies			
Cruisers:	Calcutta Capetown Constance Curlew Colombo			

BALTIC.

	Russia.	Germany.	Sweden.
Battleships:	Marat Paris Commune	Elsass Hessen Lothringen Preussen	Sveriga § Gustaf V. § Manligheten § Tapperheten §
Cruisers:	S.S.S.R. Profintern Sovnarkom	Medusa Berlin Thetis Nymphe	Clas Fleming
Destroyers:	15 boats	11 boats	12 boats
Submarines:	9 boats		10 boats

* Leaders. † Aircraft-tender. ‡ Reduced complements. § Coast Defence Ships.

PACIFIC.

	Great Britain.	United States.	Japan.
	China Fleet		
Battleships:	—	West Virginia Pennsylvania Oklahoma Nevada Arizona New Mexico Mississippi Idaho California West Virginia Tennessee Maryland Colorado	Nagato Yamashiro Fuso Ise Hiyei † Kirishima †
Cruisers:	Hawkins Carlisle Despatch Durban Vindictive	Seattle (Fleet Flag-ship) Omaha	Kinu Abukuma Jindzu Naka Natori Yura Sendai
Destroyers:	—	Decatur, *with 186 boats Litchfield,* with 18 boats	Yubari and Isudzu (cruisers), with 32 boats.
Aircraft-carrier:		Langley	
Submarines:	12 boats	43 boats	Kitakami (cruiser), with 24 boats
	New Zealand Squadron		
Cruisers:	Dunedin Diomede Philomel		
	Royal Australian Navy		
	Sydney Adelaide Brisbane Delhi		
Destroyers:	Anzac,* with 11 destroyers		

* Leaders. † Battle-cruisers.

CHAPTER V.

The Naval Policy of Japan.

A great deal has already been written lately, both in Europe and America, about Japanese naval policy, so much so that the casual observer might come to the conclusion that there is very little excuse for imposing on the patience of naval readers by discussing further this oft-repeated theme. According to these critics, Japan has been the pacemaker in warship building in the aftermath of the Washington Conference. Japan has been attacked again and again as the promoter of the cruiser race which is beginning to tell heavily on the public finance of the several Powers. Some of the writers go so far as to imply that Japan is arming for a coming conflict on the Pacific.

But all these criticisms come from pens and mouths which are not Japanese, and I can aver that, notwithstanding their volume, this interesting naval problem remains to-day quite untouched, so to speak, or, worse still, that a wholly mistaken conception about the true state of things seems taking root outside Japan. It is most regrettable for her that the case should be misrepresented to such a degree.

It is regrettable for the world, too, that such a mistaken impression should raise a false alarm and call forth a real armament competition which every thinking person should strive strenuously to check. All this while Japan has remained silent and waited patiently for the facts to speak for her; she was sadly mistaken in her expectation. Now, the "man in the street" in London or New York does not trouble himself to ascertain the number or strength of the Japanese or any other Navies; the figures given in the newspapers are readily accepted as facts. They take no pains to study dispassionately the geographic or economic situation, and without that fundamental knowledge they jump hastily, with the sensational writer, to the conclusion that Japan is building cruisers and submarines far exceeding the normal need of her defence. Such being the case, Japan's further reticence is detrimental both to her own interest and to that of the world in general. It is high time that she should lay her own case before the public, and should dispel any mistrust and misunderstanding, if they exist, concerning her intention and conduct.

In the following lines I shall try to do my humble part as a Japanese and a Japanese naval officer.

The Building of Auxiliary Vessels.

One of the charges made against Japan is that she has built a great number of auxiliary vessels since the Washington Conference. From December 1921 up to the end of May 1926, Japan completed 11 cruisers, 29 destroyers and 28 submarines; a total of 68 vessels with an aggregate tonnage of 119,460 tons. Of these vessels 10 cruisers, 22 destroyers and 23 submarines had been already laid down when the Conference opened. If one overlooks this latter fact and remembers only the former, it surely does not speak favourably for Japan; but this piecemeal analysis of the subject is most deceptive. What does really count in this case is the total strength of auxiliary force each Power possesses, and that is nothing but the sum total of naval constructions before and after the Conference. In the course of eight years between 1914 and 1921, Japan built 7 cruisers, 46 destroyers and 19 submarines; 72 vessels with a tonnage of 98,073 tons as against the British and American constructions of 400,000 tons and 350,000 tons respectively. No final judgment should be passed upon Japanese auxiliary construction until these totals have been set out in order and compared.

In the fall of 1921 the so-called Japanese 8–8 programme was well on foot. Then came the Washington Conference, which put an end to capital shipbuilding, that is, to the main part of the programme. Up to that time Japan had been engrossed in increasing her capital ships and could spare only a small portion of the naval budget for auxiliary craft, so that her auxiliary forces were much behindhand in every sense of the word. Ten years' holiday in capital shipbuilding might have been very propitious for remedying the deficiency in ancillary vessels. The Treaty put no restriction on the numbers of those vessels. Japan would have been free to draw up a new programme of cruisers, destroyers, etc., which were badly needed. Money saved from capital ships might very well have been applied to building a large auxiliary force, more particularly as the state of our naval defence would have justified it. But disarmament was the slogan of the day, and Japan was behindhand to none in giving effect to it.

Every possible cutting-down was effected in the Japanese Navy. Even the building programme of auxiliary craft, as already authorized by the Diet, did not remain untouched. She revised the auxiliary vessel part of the 8–8 plan, decreased the numbers, cut down the total tonnage by about 31,000 tons, and contented herself by merely modernizing some of the types of units. That revised plan is the one Japan has on hand at present. It was originally adopted in 1920, that is, before the Washington Conference, was revised and retrenched in 1922, and was to be completed by the end of March, 1928, but the great earthquake in the succeeding year caused the term to be prolonged by a year. The whole scheme, with the progress that had been made up to the end of May 1926, is shown in Table I.

A new appropriation was authorized in the last session of the Imperial Diet for the construction of 4 other destroyers to be completed within the same period as the above programme. The

TABLE I.—JAPANESE AUXILIARY VESSELS PROGRAMME (Revised in 1922).

Types of vessel.	Whole scheme.		Completed.	Building.	Not laid down.
	No.	Tonnage.			
Cruisers	8	68,400	1	7	0
Destroyers . . .	21	30,900	7	9	5
Submarines . . .	27	37,770	5	14	8
Total .	56	137,070	13	30	13

composition of the Japanese auxiliary force on the completion of the present building plans, and its decline afterwards due to the age of its component units, are seen in Tables II. and III. respectively. In these tables the age limit for first- and second-line services is put at 16 years for cruisers and at 12 years for destroyers and submarines, all counting from the date of completion. It will be almost superfluous, at least for naval officers, to point out that the vessels of second line, obsolete in design and worn by long service, are not of much military value. But something is better than nothing, and that is a weighty consideration in matters of national security, and they are retained pending replacement.

TABLE II.—JAPANESE AUXILIARY FORCE (APRIL 1929).

Classes of vessels.	1st Line Service.	2nd Line Service.
	No.	No.
Scout Cruisers	8	0
Light Cruisers	17	4
Destroyers above 1,000 tons	49	5
,, under 1,000 tons	36	15
Submarines above 1,000 tons	22	0
,, under 1,000 tons	47	8
Total	179	32

TABLE III.—NUMBER OF VESSELS ENDING TERMS OF 1ST LINE SERVICE.

Fiscal Year.	Cruiser.	Destroyer.	Submarine.
1929.	—	4	1
1930.	—	7	—
1931.	—	6	3
1932.	—	10	7
1933.	—	14	12
1934.	1	10	8
1935.	1	5	5
Total . . .	2	56	36

NOTE: The Japanese fiscal year begins on April 1 of each year and ends on March 31 the following year.

The strength of the auxiliary force necessary for Japanese national defence will be dealt with later on. For the moment it must suffice

to point out that a glance at these tables suggests strongly that a new building programme will be needed in the near future. Table II. shows that the Japanese Navy will have a respectable numerical strength in auxiliary vessels within three years, but it will be only an ephemeral one if an adequate provision were not taken for the replacement of the vessels falling into the second-line service due to age limit and obsolescence. Even in April, 1929, 32 vessels, representing 10 per cent. of the then existing tonnage of her auxiliary force, will be already on the second-line list, and they will be joined in quick succession by many others within a comparatively short time. From 1930 fiscal year will begin a period of a very large replacement in auxiliary tonnage, and in 1931 the keel of the first replacement capital ship must be laid down by the provisions of the Washington Treaty. Thus, in five years' time, the Imperial Navy will be in a very difficult situation. Before the Washington Conference the annual appropriation for new construction averaged about 250,000,000 yen. Just after the Conference it was cut down to 119,000,000 yen, and then it came down to about 88,000,000 yen after the earthquake, at which level it has since been kept.

Suggested New Programme.

As our trade returns and our exchange rate speak most eloquently, we are recovering quickly from the blow of the great earthquake. Moreover, the present programme will end in three years. *En résumé*, one can easily understand that, financially speaking, the next five years will be a period of comparative ease for the Japanese Navy, but after that, years of great difficulty will follow. Viewed from the military side, her strength in auxiliary craft, still far below the requirements of national defence, is fast declining. It will be nothing more than national common sense, therefore, that we should not let matters drift to a sort of building crisis, five years from now, but should use these five easy years for making good the Navy's most pressing needs. We deem it opportune and quite natural that a new building programme should be discussed both in this country and abroad. According to unofficial information, it will be as shown in Table IV.

Table IV.—New Building Programme of the Japanese Navy (not authorized yet).

Kind of vessels.	Number of vessels.
Cruisers	4
Destroyers	20*
Submarines	5
Aircraft tenders	1
Repair ships	1
Oil tankers	1
River Gun Boats	3
Light Mine Layers	2

* Of these 20 destroyers 4 have already been asked for and provided.

It seems that the naval authorities originally intended to execute

the plan in five years, beginning the fiscal year 1926. Somehow or other, only 4 destroyers were proposed and authorized in the last Diet, and the programme as a whole is still a mere paper project, and at this stage one cannot forecast what alterations will be made to it before it is finally authorized. One thing is certain; considering the present condition of the Japanese auxiliary strength and its deterioration in the near future, some new building plan is an absolute necessity. It ought to come and surely will come. There will be no protest against that, I feel certain. Moreover, troubled hearts abroad, if any, will be assured by the very moderate tone of the reported programme; it promises only to replace the obsolete vessels, that is, those on the second-line service as in Table II., and no trace of any ambitious plan of reinforcing the existing strength can be detected in it. With the prospect of a considerable replacement, including capital ships, and quite an unambitious scheme in these days of comparative ease in view, one might safely conclude that the numerical strength of the Japanese auxiliary force will, 10 years hence, be at much the same level as it stands to-day. It remains to be seen for what purpose it is intended.

The Industrialization of Japan.

The returns of trade and commerce show two prominent features of the present-day Japan, the first being her total dependence on sea-borne trade and the second the industrialization of her economic life. Japan was an agricultural and self-supporting country for many centuries. Her foreign trade amounted only to 30 to 40 million yen at the beginning of the Meiji Era, about sixty years ago. More than twenty years elapsed before it rose to 100 millions, but since then its progress has been steady; within a decade 500 millions was passed, and in another decade it doubled to 1,000 millions. Last year's foreign trade reached the record amount of 4,890 million yen, which, expressed in other words, means that freight, equivalent to about one-tenth of the Japanese wealth, was carried across the oceans. Her merchant marine has grown very rapidly, too; she ranks third in the world to-day with four million tons of steamships and one million tons of sailing vessels, and from 75 to 80 per cent. of her foreign trade is carried in national bottoms.

On the other hand, agricultural Japan has passed away, and an industrial Japan has sprung up in her stead. The average of five years before the World War of the import of foodstuffs was 137 as against 100 of export, but now imports stand at 378 per 100 of export. In the raw material trade, too, imports are on the increase and exports on the decrease. The indices of imports for the same period are 122 and 173 respectively per 100 of exports. But in the commerce of manufactured goods the situation is reversed, and the index of imports came down from 82 to 40.

Overseas Materials and Foodstuffs.

Now, Japan is an Island Empire with a population of 77 millions, which gives 113 inhabitants per square kilometer. The density is

less, at first sight, than in Holland, Belgium or England and Wales. But in those countries the proportion of arable area to the total area ranges from 60 to 80 per cent., whilst in Japan it is only 18 per cent., and it follows that Japan is, in reality, the most crowded of all the civilized nations. It is clear, therefore, that Japan cannot keep her place in the world by agriculture alone; she will not be able even to feed her teeming sons. At present the import of foodstuffs is not yet very great, but it is steadily rising; 2 million metric tons of cereals were poured into our country last year. Under these circumstances, industrialization will be the salvation of Japan, and we welcome the changes working in our economic life.

But here, again, we encounter a new difficulty, and another vulnerable point is added to our armour of defence. Japan is poor in natural resources and, to supply the factories, we must get raw materials from abroad. We must get many of our manufactured goods from foreign markets, too. To do this our sea-communications must be safe and secure. Thus it will be seen that the Japanese Navy is not a national extravagance, but an absolute guarantee of national existence; it stands for the safety of the sea-borne trade of Japan, which is the source of her life and prosperity. For centuries the sole problem of national defence was to keep the foe from our shores, for which, thanks to our geographical position, there was very little need for a strong navy. During the Chino-Japanese War, or, even later, during the Russo-Japanese War, the rôle of the Japanese Navy was quite simple: destruction of the enemy fleet and the safety of the sea-communications for the supply of the expeditionary forces.

The New Economic Situation.

The situation is now quite different, and the Japanese Navy is needed for more onerous duties. It must now both defend from invasion and protect foreign trade which feeds the nation and her industries. For the sake of information, the proportions of imports to the total consumption of the principal articles which Japan draws from oversea sources, are given in Table V.

This table will give an idea what sea-communication means to Japan. We have to enter a little more into the detail of the Japanese trade protection.

The sea surrounded by the Japanese Archipelago on the east and the Asiatic Mainland on the west, contains the sea routes from Japan to Chosen, to Manchuria, to Central China and Tai-Wan. They are the thoroughfares for 33 per cent. of the total imports to Japan, in which are included 40 per cent. of rice, 100 per cent. of beans, and 65 per cent. of iron and ore. Through the China Sea, farther south, run the routes to Australia, to British and Dutch Indies, to Siam and Indo-China, etc. These countries are the origin of 22 per cent. of our imports and are responsible for the supply of rice, wheat, sugar, oil, rubber, cotton, wool, zinc, lead, nickel, etc., all of first importance to our national life. Over the longer routes

TABLE V.

Articles.	Percentage drawn over-seas.
Rice	15
Wheat	55
Beans	50
Sugar	95
Fuel Oil	75
Cotton	100
Wool	100
Rubber	100
Nickel	100
Lead	95
Zinc	80
Steel	55
Iron	45
Fertilizers	60
Dye, Chemicals	75
Machinery	55

from Europe and from America, another 22 per cent. is carried respectively, the principal merchandises supplied being chemicals and clothing from the former; oil, wheat and nitre from the latter; and iron and steel materials and machinery from both.

It can be easily seen from the above analysis that unless the East China Sea is made secure, Japan simply cannot live. If it were lost, Japanese communication with the Asiatic Mainland, and with it one-third of her imports, would be cut, the trade with the South Sea region and Europe would be interrupted, and the country's power of resistance would soon crumble. Japan's first naval duty is, therefore, to maintain a fleet of such composition that these closed waters may be safe against any interference.

But the security of the East China Sea is not in itself enough. At present only one-half of our imported foodstuffs is drawn from Chosen and the Chinese Mainland. In time of war, with the granaries of Manchuria and the Yangtse Valley in secure communication, we might manage the supply of cereals, but there are many other articles of prime necessity which are not produced in these parts. The importance of these waters lies not only in that they contain the Japanese communications with the Asiatic Mainland, but also in that over them passes her all-important trade from farther south. Even for some of the foodstuffs, sugar for instance, she must always rely on a source outside this area. But an item of the utmost importance coming from farther afield is fuel oil. One-half of the oil imports of Japan is drawn from Dutch Indies, and the freedom of that sea-route will be absolutely necessary for her power of resistance. The control of the routes in the China Sea is of great value to Japan, too, for the supply of rubber, clothing materials and metals. The protection of trade in these waters is, therefore, a charge against the Japanese Navy almost as essential as her first duty.

Chemicals and machinery, which come last in the scale of importance, are imported over long distances from Europe and America. Although they might seem, at first sight, not essential to Japan, it is

undoubted that in war she will greatly benefit by having one of these two lines of supply kept open. If they were closed simultaneously the consequence would be that the country could never, in any emergency, increase its plant of industrial machinery, or replenish its stock of chemicals. Japan is under intensive cultivation, and the lack of agricultural labour and the stoppage in the imports of chemical fertilizers are matters of weighty consideration in tackling the problem of her food supply in time of war. It is thus a third charge upon the Japanese Navy to keep open either the European or the American route.

England and Japan: a Comparison.

If one compares all these considerations with what Admiral of the Fleet, Earl Jellicoe, wrote in last year's "Annual," one will not fail to find a striking resemblance, strategically and economically speaking, existing between Japan and Great Britain, and I shall not be too presumptuous in saying that the opening sections of Lord Jellicoe's contribution apply to a large extent to Japan and to her Navy. Japan and Great Britain are alike both Island Empires. Both are dependent on sea-borne trade for national sustenance and prosperity. Both draw from distant sources their oil supplies, the motive-power that drives the machinery of war and industry. Of course, there exists differences in degree, that is certain, but viewed in the light of naval policy the essential requirements of the two countries are much the same. To enumerate the chief function of the Japanese Navy I had better apply what Admiral Sueter, M.P., wrote concerning the British Navy in a recent number of the "Empire Review," to our own Navy; the chief function of the Japanese Navy is to protect our shores from invasion, to defend our far-flung islands in the north and south, to maintain our mandate in the Pacific, our great sea-borne trade, our oil supplies, our countrymen engaged in commercial enterprises in all parts of the world, and to secure the communications of our oversea expeditions and our garrisons in Manchuria and Formosa. Will the Japanese Navy be equal to all these requirements?

If the new building programme now under consideration becomes a fact, the Japanese fleet of the first line will, in 1931, be composed of:

10	Capital Ships.	
2	Aircraft-carriers.	
12	Scout Cruisers.	
17	Light Cruisers.	
61	Destroyers over 1,000 tons.	
29	,,	under 1,000 tons.
27	Submarines over 1,000 tons.	
46	,,	under 1,000 tons.
2	Aircraft tenders.	

Upon this fleet depends the life or death of our Island Empire, which is not self-supporting. The task seems not an easy one, and the Japanese Navy will be called upon to accomplish it in face of a force far superior to its own. Favoured by the geographic situation, it might maintain itself in the East China Sea and defy intruders

there. Its composition and strength seem suitable and perhaps sufficient for safeguarding the short lines of Japan's communication with the Asiatic Mainland. But the second charge of the Japanese Navy, that of keeping safe the supply routes farther south in the China Sea, is much more onerous. The theatre is at some distance from home bases; the length of the routes to be patrolled is far longer; strategic points in the hands of the strongest navies in the world command or flank those lines. Under these circumstances the trade protection in this second area requires greater strength and greater number of units of distinct characteristics from those suitable for the operation in the first area, and no one will disagree that the composition of the Japanese Fleet is anything but adequate to extend its sea power into the China Sea.

There remains still one more charge upon our Fleet, that of keeping open either the European or the American route. Those who remember what an auxiliary force Admiral Jellicoe, who had geographical conditions all in his favour, required to clear the seas of an inferior enemy, will be able to estimate the magnitude of the difficulty confronting the inferior Japanese Navy. Forty-four per cent. of Japan's trade comes through the China Sea, and if it is left to the enemy's control, Japanese supremacy on the East China Sea will not be of much avail to her.

Offensive Operations Impossible.

Any fair-minded person will surely agree that no thoughtful man can seriously maintain that the Japanese Navy could ever carry out offensive operations in distant seas. They are beyond her power; and the Japanese Navy was not built to facilitate them. At the Washington Conference, Japan gave an implicit pledge of her peace-loving policy; that she accepted the 5-5-3 ratio for capital ships is the strongest proof that her Navy is a machine of self-defence and not a means of aggression. Despite the advent and the progress of submarines and aircraft, capital ships are still the nucleus of the sea-power. For a naval operation on a grand scale, superiority in capital ship strength is the first requisite, and Japan disavowed it for herself at Washington. Auxiliary vessels are, after all, secondary weapons. The maximum of offensive they are capable of is the attack on enemy capital ships or on trade; they can never deliver a direct and a crushing blow on enemy sea-power as capital ships can do. Japan's geographical position relative to any possible enemy is very unsuitable for carrying on trade warfare. Her position is exterior to all trade thoroughfares of any foreign Powers except China, while the greater part of her trade must pass through defiles under the control of stronger Navies. The Japanese naval authorities are far too preoccupied with the question of protecting their own trade to contemplate plans for interfering with the trade of others. If, indeed, they did contemplate it, they would only find that they had neither the strength nor the means to do so.

The Limitations of Japan.

Our Navy is nothing but the means of defence. We all know the shortcomings of our country in resources and position. We all know full well, too, the actual and potential strength of our Navy. But all things change their aspects with the angle whence they are seen. It is possible, therefore, that foreigners viewing the self-same situations in the Far East from an angle other than our own, might suspect Japan's intentions or feel that her Navy was a menace. Their suspicions and fears would be equally groundless. I hope sincerely that my exposé of Japan's case may assist, though possibly in a humble degree, to exorcise the phantom of Japanese aggression ; the fears of others, though without substance, put our sense of honour in question ; and if they grow in volume may unsettle the world.

Defence is the keynote of Japanese armaments, both on land and on sea. The Japanese Navy is a national institution for safeguarding the national security ; it has no other ambition. So far it has remained true to its professed rôle and has acted up to its requirements. Moreover, it has exercised a stabilizing influence in the Far East, and so has had not an unimportant part in the furtherance of the peace of the world. The Japanese Navy aims to-day, and will do so for ever, at maintaining these sacred legacies of its forefathers.

Ichiro Sato,
Commander, Imperial Japanese Navy.

CHAPTER VI.

Destroyers of To-day.

In previous issues of the "Annual" I have had the privilege of dealing with present-day battleships and cruisers, and in each type the possibility of suggesting radical modifications of existing arrangements was a matter not entailing great difficulty, although the conclusions arrived at and the suggestions made were not expected to be at once acceptable to all those engaged in the design and construction of such craft. Coming, however, to the matter of destroyers, one is faced with a much more difficult problem so far as modification of type is concerned. The original British destroyer as described by (now Sir) J. E. Thornycroft in a paper read by him in April, 1908, at the Institution of Naval Architects, in which he refers to the inception of the torpedo destroyer in the British Navy twelve years before that date, had a displacement of 240 tons, power developed 4,000 I.H.P., with a speed of 27 knots, and was armed with 12-pounder and 6-pounder guns and 18-in. torpedo tubes. The primary object of the type was the destruction of existing torpedo boats, the largest of which had a displacement of about 130 tons with 2,000 I.H.P. and a speed of 23 knots, most of them being armed with one bow and two deck torpedo tubes of 18 in. diameter and three 3-pounder guns. If we compare the original with the very latest products of the designer's skill in this direction, it will be found that whilst the displacement, speed and offensive powers have been increased, due to advances in various directions, to be mentioned later, the type remains primarily unchanged.

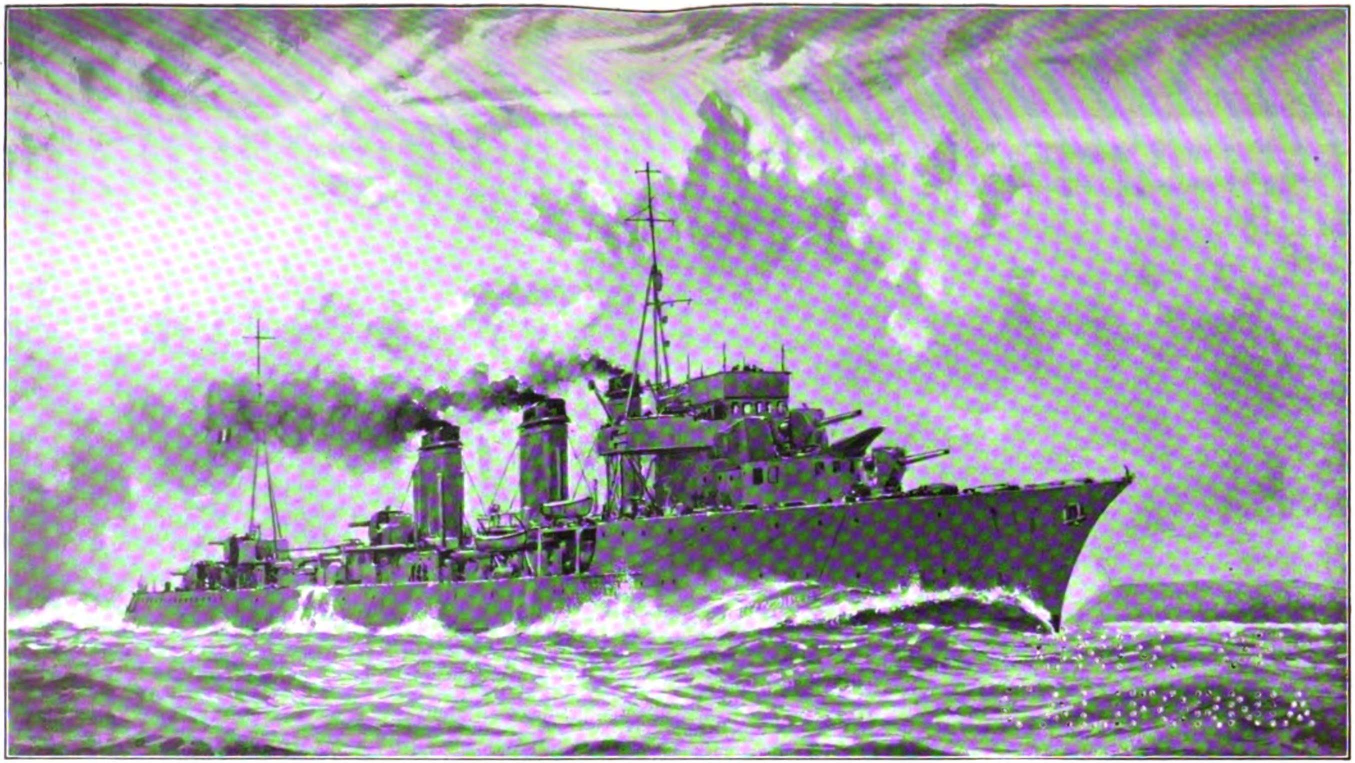
The introduction of the destroyers to all intents and purposes rang the death-knell of the torpedo boat as such, but it was found that the high speeds, the torpedo offensive power, and the handiness of the boats themselves were such as to fit them for services least expected when the type was introduced, and they have gradually grown in size, offensive armament, speed and radius of action, until we have the magnificent vessels of the new French "Chacal" type, the Italian "Leone" type, the Spanish "Churruca" type, and the latest British destroyers "Amazon" and "Ambuscade," of which the full particulars are not yet officially published. The speediest of these destroyers appears to be the Spanish type, where a mean speed of 37½ knots was obtained by the "Churruca" under normal trial conditions. The armament in most cases consists of 21-in. torpedo tubes, with a mixed gun armament, partly to be used for offensive action against other craft and smaller guns for anti-aircraft purposes. The possibility of obtaining speeds such as the fore-

going has not been arrived at except by a combination of circumstances affecting both the hull and machinery, more especially the latter. In the original types we had the old reciprocating machinery with locomotive coal-fired boilers. These were gradually replaced by oil-fired boilers; then came the introduction of the turbine together with oil-fired water tube boilers. The further introduction of geared turbines, which, as mentioned by Sir Eustace Tennyson d'Eyncourt in a paper read before the Institution of Naval Architects in 1919, added enormously to the efficiency of the machinery and propeller, the lowered revolutions thereby obtained permitting the adoption of a much more suitable propeller and giving improved fuel economy.

Their Work in the War.

Having outlived the object for which they were designed, namely, the repulsion and destruction of torpedo boats, it now remains to be seen for what purpose they are most efficiently adapted and to endeavour to ascertain from their actual performance during the Great War if there is one special category in which they can be placed as being at once necessary and indispensable, or, on the other hand, whether their many qualities enable them to be used for a multiplicity of purposes with economy and success. Taking the various accounts on this subject which have appeared from time to time in the leading literature of the maritime countries interested in the performance of such craft, and taking at the same time the published opinions of the eminent sailors who had to command and allocate to their various uses the destroyer flotillas existing at the time, it would appear that their primary use was acting as screens to the main fighting fleet; that is, getting in touch with the enemy fleet and attempting to demoralize or damage it by means of torpedo action before the arrival of their own fleets; alternatively, to take action against similar destroyer or cruiser screens sent out from opposing fleets. Another operation, which from time to time such flotillas were called upon to perform, was that of taking an active part with the opposing battleships and cruisers in action. When one or other of such fleets found it necessary or expedient to retire a destroyer flotilla was utilized for the purpose of providing a smoke screen by means of which it was rendered difficult or impossible for the pursuing fleet to localize the enemy or to define his course, with the result that on certain occasions such a fleet in flight escaped with far less damage sustained than might otherwise have been the case.

A further use to which destroyers were put was that of convoying merchant and other ships from port to port. Admiral Sims in his published work lays great stress on the fact that the convoy system was not practised until long after war had commenced, giving it as his opinion, judging by the small number of losses sustained after its introduction, that had this method obtained from the beginning the naval losses would have been very substantially reduced.



(*From a drawing by H. G. Swanwick.*)

FRENCH DESTROYER LEADER TIGRE.

(*Length*, 392 *ft.* 9 *ins.*; *displacement*, 2,362 *tons*; *speed*, 35½ *knots*. *Armament*, *five* 5·1-*in.*, *two* 2·9-*in. H.A.*, *six* 21·7-*in. torpedo tubes.*)

It is, I think, generally understood that destroyer work during the war in the finding and destruction of submarines was very valuable, so that it is rather surprising to find Admiral Jellicoe in his published work stating that after using destroyers for such purpose for a considerable time they were taken off, it being found that other means were more efficient in dealing with the submarine menace. He also states that after various cruiser losses occasioned by submarine attack, each time a cruiser left port she had to be accompanied by a destroyer, presumably for the purpose of keeping submarines at a distance, and so minimizing the possible danger from such attack to the cruiser.

In attempting to define the position of the destroyer in connection with the Naval fighting forces, we must at the present time take into consideration the development of the light cruiser as far as speed is concerned, and here we find that speaking generally, the speed of the Washington type is in most instances equal to that of the destroyer, so that for a fleet provided with an ample number of such cruisers it must, I think, be seriously considered whether these should be used for the purpose of forming the advance screen usually occupied by destroyers, or whether the immense difference in their cost would prevent this. Before dealing with this phase of the problem it would perhaps be as well briefly to describe and illustrate the leading destroyers of to-day.

Present Destroyer Leaders.

On the Plate facing p. 82 is given a sketch showing the "Tigre," the first of the French destroyer leaders of the "Chacal" type, having the following characteristics :—

Length between perpendiculars	392 feet 9 inches.
Breadth	36 ft.
Displacement	2362 tons.
Designed power	50,000 s.h.p.
Designed speed	35½ knots.
Cruising radius at 18 knots	2,500 miles.

Armament.

Five 5·1-inch guns.
Two 2·9-inch anti-aircraft guns.
Six 21·7-inch torpedo tubes, triple-mounted.

On the Plate facing p. 84 is given a sketch showing a vessel of the Italian "Leone" type, having the following characteristics :—

Length between perpendiculars	359 feet 6 inches.
Breadth	33 feet 9 inches.
Displacement	2,200 tons.
Designed power	42,000 s.h.p.
Designed speed	34 to 35 knots.

Armament.

Eight 4·7-inch guns, twin-mounted.
Two 14-pounder anti-aircraft guns.
Six torpedo tubes, triple-mounted.

On the Plate facing p. 86 is given a sketch of a vessel of the Spanish "Churruca" type at sea, having the following characteristics :—

Length between perpendiculars	320 feet.
Breadth	31 feet 9 inches.
Mean draft	10 feet 6 inches.
Displacement	1,650 tons.
Designed power	42,000 s.h.p.
Mean speed on trial	37½ knots.
Cruising radius at 14 knots	4,500 miles.

Armament.

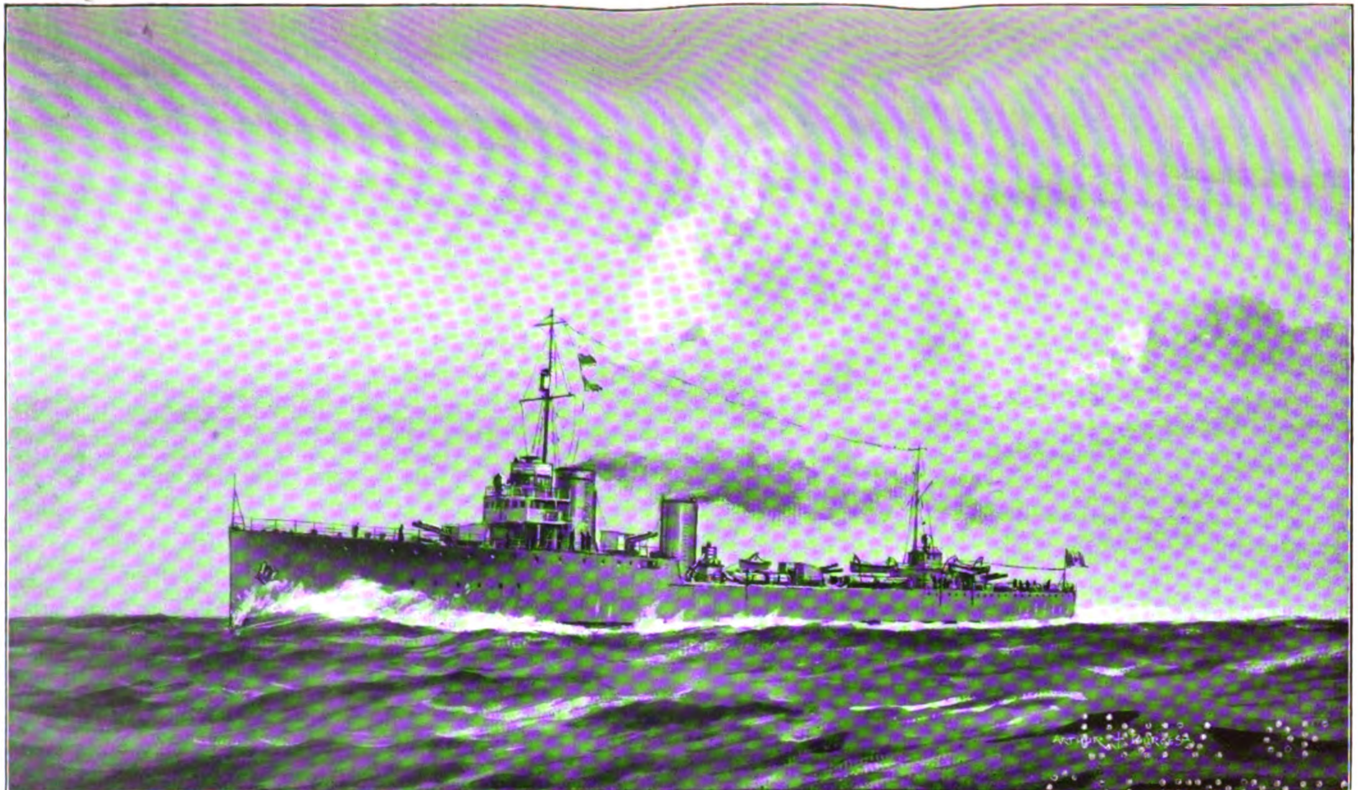
Five 4·7-inch guns.
One 3-inch anti-aircraft gun.
Six 21-inch torpedo tubes, triple-mounted.

Torpedo Armament of Destroyers.

As the fighting value of a destroyer depends largely on her armament, it is desirable to discuss first the most suitable torpedo equipment for such vessels.

In connection with the emplacement of such armament, various methods are in existence, all of them having some special feature in favour of their adoption, so that it is necessary carefully to consider the same before coming to a conclusion as to the most effective for all purposes. In some navies the torpedo equipment is all twin-, triple-mounted on the centre line, the torpedoes being launched, as desired, on either side, but, as Commander de Feo points out in the "Rivista Marittima," January–February, 1920, this necessitates a restricted area of training in order that the torpedoes may reach the water without coming into contact with the deck or the side of the vessel. On the other hand, it allows a smaller number of tubes to be employed and gives much clearer deck space. It does, however, seriously affect the emplacement of guns on the centre line. With all the guns mounted on the centre line of a ship the broadsides are left free for the placing of torpedo tubes, and there is no doubt that the present arrangement of triple- and quadruple-mounting, as far as torpedoes are concerned, is the most satisfactory. When the torpedo tubes are mounted on the broadsides it permits training through much greater arcs than is possible with centre-line tubes, the number mounted together and trained as one unit being at the discretion of the respective authorities. In each of the foregoing methods the orders for training are given from the bridge, the actual firing operation being performed by the officer in charge of one of the control stations on the bridges either fore or aft.

Commander de Feo, who has evidently given much thought to this subject, is strongly in favour of placing all the torpedo tubes, whether twin- or triple-mounted, on the broadsides in definite fixed positions and angles, so that to attack any target the vessel has to alter her course for the purpose of bringing the torpedoes to bear on such target, in which case the Control Officer is responsible not only for firing at the correct moment, but also for the correct direction of the torpedoes, and no error can arise from a misinterpretation or misunderstanding of orders transmitted from the Control Station to the torpedo crew, the reason for such arrangement being based



(*From a drawing by Arthur J. W. Burgess.*)

ITALIAN DESTROYER LEADER "LEONE" TYPE.

(*Length*, 359 *ft.* 6 *ins.*; *displacement*, 2200 *tons*; *speed*, 34 *to* 35 *knots.* *Armament, eight* 4·7-*in.*, *two* 14-*pdr. H.A.*, 6 *torpedo tubes.*)

on the assumption that a group of launching tubes, especially when a high sea is running and when the training orders have to be transmitted from the bridge, could not be successfully operated.

On account of new control arrangements, it is now possible to fire from any fixed position, and without altering the course of the ship to control the launched torpedo in such way as to take any desired direction on reaching the water, but it appears to me that, however successful such methods may prove, it is very desirable to simplify firing operations to the greatest possible extent, and in my opinion the most satisfactory arrangement would be to have the tubes arranged on the broadsides, triple- or quadruple-mounted, and to have three definite fixed positions for same to which they could be trained, namely, as far forward as possible, as far aft as possible, and direct on the broadsides. The only orders to be transmitted from the Control Station to the torpedo crew would then be to train the tubes to one of the three fixed positions, the whole of the remaining work being carried out by the Control Officer from the bridge. The possibility of adopting either one of the three positions called for by the necessity of the moment, requires a much smaller alteration of the vessel's course than if the tubes were placed in one definite position only.

I am quite in agreement with Commander de Feo's opinion that the torpedoes should be capable of firing at the maximum distance against enemy ships and for such purpose it is necessary to have torpedoes capable of negotiating the greatest range of the guns of the opposing fleet, which would appear to call for an increased calibre and range of the present-day torpedo so as to admit an appreciable increase in the explosive charge and possibly a greater regularity and accuracy in firing.

Calibre and Emplacement of Gun Armament.

Although the torpedo armament is for the destroyer the primary aim of offence and defence, the question of artillery also has an important bearing on her value as a fighting unit, so that considerable attention must be given to the calibre and emplacement of the gun armament. In the "Rivista Marittima," January–February, 1920, Commander de Feo gives his opinion as to the gun armament by suggesting that the present method of carrying the guns on the centre line instead of the broadside, which he contends has been too long persisted in, is the correct one, stating that it required the war, with frequent encounters between light craft, to prove it a mistake to carry guns in such manner as practically to render useless those guns arranged on the broadside away from the enemy, and further suggests as logical that the guns of such light craft, should be all of one calibre, thus doing away with needless complications from varying sizes of ammunition and the difficulty in carrying out attack with two sizes of gun and so weakening the maximum offensive due to a zone of elevation between two sizes, in which the smaller size would be useless. He also suggests that as it is not possible to install a large number of anti-aircraft guns

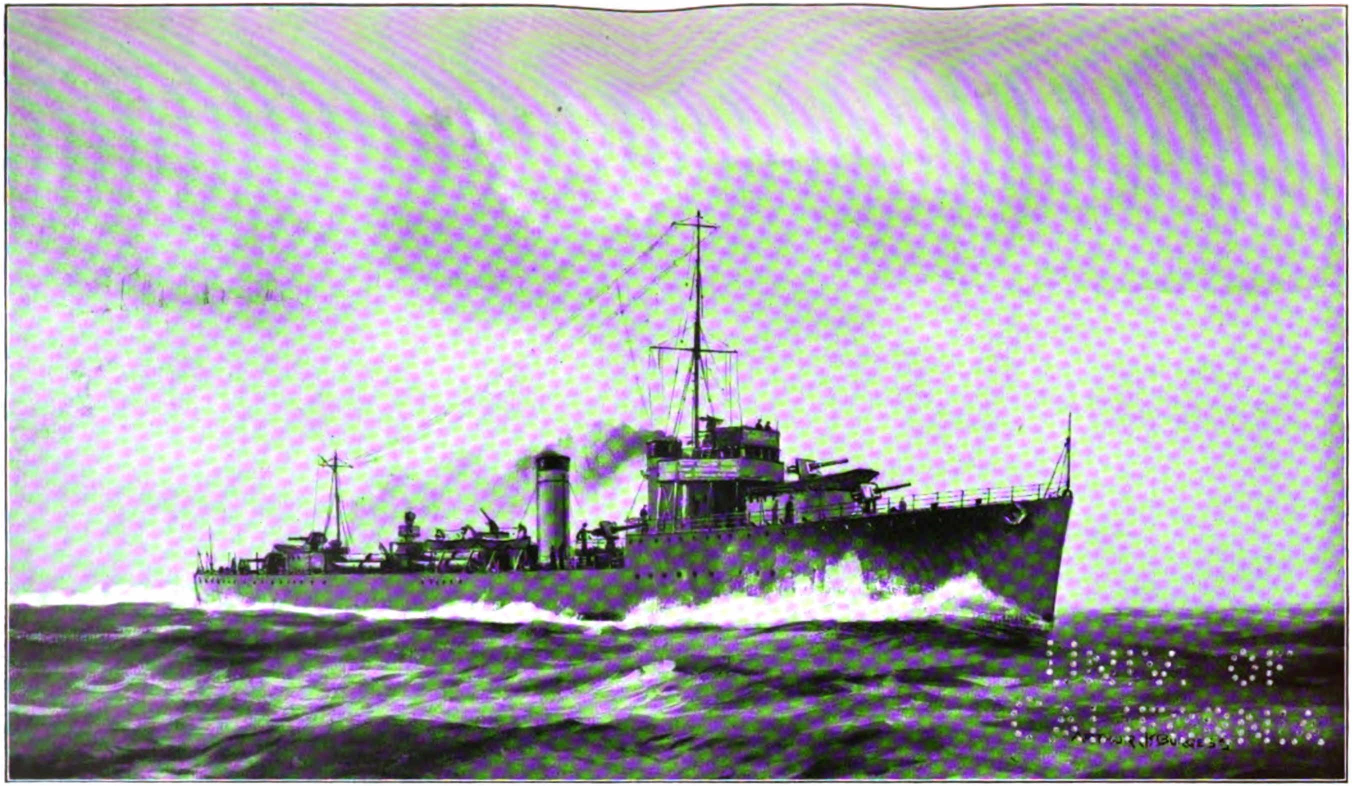
in addition to the naval guns, the simplest and most obvious thing would be to adapt all the guns for anti-aircraft purposes, and suggests that so far as destroyers are concerned, a calibre of 102 mm. (4-in.) is sufficient, and is to be preferred to the 120 mm. (4·7-in.), so as not, on ships of limited displacement, to cut down the number of guns, advocating twin- or triple-mountings for the same.

In the main I am in agreement with the suggested arrangement of the gun armament, that is, where it is found possible to fit all guns on the centre line it will be advantageous to do so, and if the displacement allows, to twin- or triple-mount them in order to increase their number, but I am at issue with him as to the size of guns to be carried. The guns fitted on destroyers are not purely for purposes of repelling aircraft, but principally for their own defence against opposing destroyer and light cruiser attack. An interesting example of the possibilities in this direction is given by Commander George Von Hase in his description of the first phase of the Battle of Skagerrak. He states that as the two lines of British and German battleships were steering a sharply converging southerly course the Germans observed that the British were sending destroyers to the attack, and very shortly afterwards between the lines of battleships and cruisers a small and independent action developed in which about twenty-five British and a corresponding number of German destroyers waged a stubborn action and successfully prevented each other from using torpedoes against the opposing battleships and cruisers.

There is no doubt in my mind that the more heavily armed destroyer stands a better chance of coming out successfully from such action as the foregoing, and from the various other offensive work to which destroyers were put during the war, and I am forced to the conclusion that guns of a calibre of less than 120 mm. (4·7-inch) are not adequate. I would suggest not only that the destroyer armament should consist of 4·7-inch guns, but that it should, as is done in many cases at the present time, be adapted, if single-mounted, not only for surface attack, but also for anti-aircraft purposes, but as it is hardly within the bounds of possibility that any excessive aircraft attack will be made on such small and mobile units as destroyers, their armament should be supplemented by guns of smaller calibre, say 40 mm., triple or quadruple-mounted. It would in most cases, of course, be possible to carry a sufficient number of such guns to form an effective defence from air attack, and the calibres would differ so greatly that there would be no possibility of confusion in ammunition supplies.

Forward Gun Fire and Aircraft Hangar.

A further point to be taken into consideration before a final decision respecting gun armament in destroyers is taken, is that in the past the larger destroyers have been repeatedly used for scouting purposes for the fleet which they accompany, and in the future it is possible that they will still be used for this purpose, in which case it may be found necessary to equip them with one or two air-



(*From a drawing by Arthur J. W. Burgess.*)

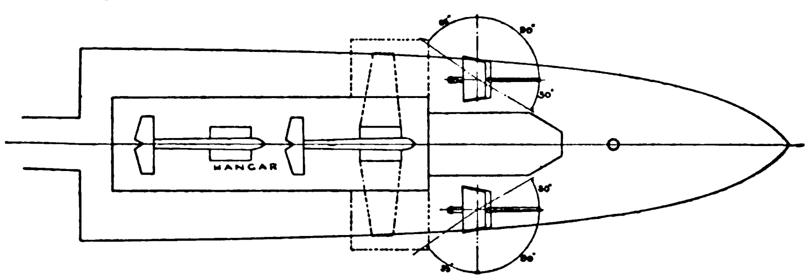
SPANISH DESTROYER LEADER "CHURRUCA" TYPE.

(*Length*, 320 *ft.*; *displacement*, 1650 *tons*; *speed*, $37\frac{1}{2}$ *knots*. *Armament*, *five* 4·7-*in.*, *one* 3-*in.* *H.A.*, *six* 21-*in.* *torpedo tubes.*)

craft units, the fitting of which may render it impossible to place all the guns on the centre line. Forward fire, if desired, may have to be arranged by placing two or more guns on the forward quarters capable of firing with a good angle of training on their own broadside, together with the possibility of firing to a certain extent across the beam if not prevented by the position of the hangars, endeavours being made to obtain a satisfactory loading arrangement in such position without the necessity of bringing the guns back to a fixed loading position for each discharge across the beam. One authority on the subject suggests that forward gun fire in a destroyer is not absolutely necessary, citing some of the later German destroyers in which forward fire is entirely unprovided for. This authority looks upon such an arrangement as satisfactory in that it more or less compels the commander to utilize what he terms the real offensive power of the destroyer, namely, torpedoes.

A Super-Destroyer.

On this page is given a sketch of the forward deck arrangements of a super-destroyer in which a hangar is fitted for the stowage and launching of two aircraft. It also shows the angle of training



across the beam which it is possible to arrange for the 4·7-inch guns fitted on the forward quarters. It should, however, be pointed out that such arrangement, even on the largest of existing destroyers, would be a matter of difficulty on account of the narrow beam of the vessel in way of the forward gun positions, so that for the purpose a somewhat larger type is suggested.

In my opinion, the most effective arrangement of gun armament is for the whole of the primary guns to be arranged on the centre line, either single-, double-, or triple-mounted, excepting in cases where the fitting of aircraft necessitates the placing of guns on the quarters, and that such armament should consist of two calibres, one whose principal use is offensive action against destroyers, cruisers or submarines, and a smaller calibre whose sole use is for anti-aircraft purposes; the whole of the primary gun armament, when single-mounted, being adapted when required for anti-aircraft purposes.

Having discussed the position and possibilities of present destroyers, we have to consider whether it is possible to add other features which would tend to make such craft still more formidable and effective as fighting units. It will, I think, be conceded by those who are acquainted with the destroyer type of construction

that except in the larger units, such as the flotilla leaders, the comfort of the officers and crew in ordinary times, and especially so in bad weather, is far from satisfactory, and that such conditions are inevitable so long as the present size and type exists, and can only be bettered by the introduction of larger units.

There appears to be a general tendency in the navies of the world to-day to increase the size of the destroyers and to make them all more or less of the flotilla leader type, whilst in the U.S. Navy a light cruiser type has been used for the purpose of flotilla leader.

It would appear improbable that the costly and powerful Washington type of cruiser should ultimately take the place of destroyers for the purpose of forming battle screens, and, as is evident from Admiral Jellicoe's report of various actions, that in bad weather destroyer flotillas are of little or no use as screens to a fighting fleet, seeing that their speed is reduced to 10 knots or under, the question arises as to whether an intermediate type will not of necessity be introduced of somewhat greater dimensions than the present flotilla leaders, with a greater length and higher freeboard, and with a speed equal to or exceeding that of the fastest destroyers built or building. Such craft should have a primary armament adapted for offensive action against other light craft, and arranged also where single-mounted for anti-aircraft guns, together with smaller calibre purely anti-aircraft guns.

The torpedo armament to be fitted on the broadside, the vessels at the same time being fully equipped with a complement of depth charges for anti-submarine purposes. As it is more than probable that such type would also be used for scouting purposes, a certain number of the class should be adapted for carrying aircraft forward, and, if thought desirable, to be designed for carrying and laying a reasonable number of submarine mines.

Such type, whilst not exceeding to any appreciable extent the cost of the existing vessels, would carry out all the work now done by the destroyer flotillas, and with their more powerful torpedo armament be a greater menace to attacking battleships or battle-cruisers, whilst their better sea-keeping qualities, and, in some cases, mine-laying and plane-carrying capabilities, would render them more efficient for scouting and other purposes than the present type. In addition to the above, it is self-evident that the greater comfort and habitability of such type must to a large extent, where long and arduous duties have to be carried out over great periods of time and in rough seas, have a very salutary effect on the *morale* of the officers and crew. The losses of such type in any screen action would probably be far less in cost and human lives than if the 10,000-ton cruisers were used for such purpose.

It is, of course, impossible to lay down hard-and-fast rules as to the evolution and final development of the super-destroyer, but everything points to an advance on the lines indicated, although the last word remains to be said by those who in times of stress would have the control of the fleet in their hands, and circumstances known only to those in the inner circles may possibly affect one or other of the components.

(*From a drawing by Arthur J. W. Burgess.*)

PROPOSED SUPER-DESTROYER LEADER.

(*Length*, 400 *ft.*; *displacement*, 2900 *tons*; *speed*, 36 *knots*. *Armament*, *ten* 4·7-*in.*, *at least sixteen* 40-*mm. H.A.*, *sixteen* 24-*in. torpedo tubes.*)

SUPER-DESTROYER LEADER.

On the Plate facing p. 88 is given a sketch of a super-destroyer leader, the normal displacement of which is round about 2,900 tons, or an increase of about 1100 tons on present-day British destroyer leaders, and of about 540 tons over those of the French destroyer leader type, the speed of such boat being round about 36 knots. The armament would consist of 4·7-inch guns, twin- or single-mounted, or part single and part twin, as circumstances of the emplacement of the torpedo armament and other matters may necessitate, together with a number of smaller purely anti-aircraft guns. Both the single-mounted 4·7-inch guns and the smaller guns would be adapted for anti-aircraft fire, and the torpedo armament would consist of sixteen 24-inch torpedo tubes, arranged quadruple-mounted on the broadsides. As the majority of such type would not be arranged for mine or plane carrying, such arrangements are not included in the sketch.

Admiral Jellicoe states that it was only in 1911 that destroyer attacks were carried out in the British Navy on a large scale. The Grand Fleet battle orders laid stress on the supreme importance both of making early torpedo attacks on the enemy's lines and of immediately countering corresponding enemy attacks, it being pointed out that an early attack by our own destroyers would not only tend to stop an enemy attack, but would place our attacking vessels in the best position to meet it when developed, and war experience proved that it was unwise to take a fleet far into enemy waters unless an adequate destroyer force was present to act as a submarine screen for all ships.

Admiral Jellicoe states that "the anti-submarine operations by destroyers or sloops met with no success." Admiral Sims, on the other hand, states that " the submarine problem, so far as it affected the Battle Fleet, had already been solved, the explanation being found in the simple circumstance that whenever the Dreadnoughts went to sea they were preceded by a screen of cruisers and destroyers," the latter conveying " the impression of fragility rather than that of strength, but really possessing the power of overcoming the submarines, the war not having progressed very far before it became apparent that the U-boats could not operate anywhere near these speedy little surface craft without running serious risk of destruction."

That destroyer attack on a battle fleet is likely to prove a serious factor to be reckoned with is strengthened by Admiral Jellicoe's report that as the result of one attack by our torpedo flotilla at least four German battleships of the pre-war type were hit by torpedoes, in addition to the pre-war battleship "Pommern," as well as the light cruiser "Rostock."

Admiral Sims is of the opinion that few ships have justified their design so successfully as the torpedo boat destroyer. Not only did they practically eliminate the torpedo boat, but assumed the function of such craft in the attack on capital ships and in their defence, whilst in the late war they proved their worth in the destruction of submarines, patrolling danger zones, and providing convoy for merchant shipping and troop ships, which enabled the war to be brought to a successful conclusion.

The desirability of, in some way, improving the sea-going quality of destroyer flotillas, whilst at the same time retaining their present characteristics, is brought home to us by the considered opinion of those who took part in the various naval encounters of the late war.

Admiral Jellicoe states in one place that "the second battle squadron was unprovided with any vessels of the destroyer type, as the weather conditions in the Pentland Firth made it out of the question for them to put to sea from Scapa," and in another place, that "the sea had become so heavy that destroyers with a battle fleet could not safely steam at 10 knots."

The late Admiral of the Fleet, Sir Doveton Sturdee, Bt., in his paper read at the Institution of Naval Architects, 1924, states that "the number of times even in North Sea waters when either the Fleet had to ease speed or the destroyers had to be detached showed a need for better sea-going qualities. Possibly in order to retain these requirements in destroyers they may become nearly as large as the present Destroyer Leaders and if the latter class are to be continued some of our present small cruisers might be utilized, larger cruisers being built to replace them."

Although Admiral Scheer, who commanded Germany's High Sea Fleet in the Jutland Battle, does not deal so largely as Admiral Jellicoe with the question of destroyers, yet his remarks respecting same are very pertinent and to the point. He states in one place that the fleet could not dispense with attendant destroyers on account of the danger from submarines, the defence against which was the work of the destroyers, and also because the destroyers were indispensable in battle, the safety of the fleet depending on them to a very large extent. In another place he states that the appearance of the submarine as an advanced weapon made it a necessity in modern battles to screen the approach of a fleet with destroyers, and that it was so much a matter of importance to increase the offensive powers of a fleet inferior in numbers by the employment of destroyers, that it was impossible to dispense with them. He also refers to operations intended to equalize the opposing forces, operations which, apart from minor successes, rested on the anticipation that the destroyers would find opportunities for attack in nocturnal raids.

I have had no hesitation in introducing the foregoing references to the opinion of naval authorities, for it is principally to those who had to work out the problem set them in this direction during actual operations, and to those who have to embody in units to be now constructed the lessons then learnt and imparted to them, that we have to look for new features and ideas, and to my mind the trend of such progress is a tendency in responsible naval circles and in those naval designers responsible for carrying to successful issues the requirements of such authorities, to be exemplified in a naval unit fulfilling the new requirements, to provide larger and better sea boats, whilst at the same time retaining the characteristics of the present class extended to the highest degree.

GEORGE THURSTON.

CHAPTER VII.

Cruiser Design and Cruiser Warfare.

There is nothing very novel, or indeed novel at all, in drawing attention to the specialized types of ships which were in active service at the armistice in 1918. Every naval officer knows that their construction and development were the outcome of a regular evolution in naval warfare. Special types were needed to carry out special duties, and so the old battleship which bombarded the coast of Flanders in 1914 gave way to the monitor; the improvised mine-sweeper to the vessel built and fitted for the purpose; and "P" boats, coastal motor-boats and many other classes were successively added to the steadily expanding list of naval craft of specialized design.

But every class of vessel was not equally affected by this evolution. The design of minor types was extremely unstable, and liable to supersession; that of the heavier types was fairly stable; whilst that of the cruiser types was affected only by the submarine campaign.

The war upon commerce, in the outer trade routes, did not affect cruiser design at all; and it is for this reason that we may assume that the present state of cruiser construction is purely provisional. It is the outcome of an incomplete experience of war; and one can hardly doubt that the responsibilities and duties of cruiser warfare will, some day, create special, differentiated types of cruiser forces.

Are there, in the history of the war at sea, between 1914 and 1918, any beacon marks to show in what direction cruiser design will most probably move? I suggest, that, though the existing data is insufficient to support any practical experiment in cruiser design, it is enough to serve as a basis for prophecy.

The Ocean Cruiser.

The ocean cruiser of the 10,000 and 7,000 ton type is a combination of as many offensive qualities as her tonnage allows; and at first sight the cruiser operations which began in August 1914 and ended with the destruction of Admiral von Spee's squadron, would appear to justify a type whose dominant characteristics are speed and gun-power. Within two days of the outbreak of war our cruisers in the West Indies were in touch with the enemy. The Suffolk sighted the Karlsruhe on the afternoon of August 6, and lost her after a long, stern chase; the German captain fell in with the Bristol after nightfall, but again escaped, and raided British shipping

without disturbance for three whole months. It might be said, therefore, that an additional two knots in the cruisers Bristol and Suffolk would have saved 76,000 tons of British shipping.

But the argument, if sound, is not of wide application. The Emden entered the Indian ocean at the end of August and raided British commerce until November 9, when she was destroyed in an action with the Sydney. During the whole of her raid she was never in contact with any British forces, and no additions to the offensive or defensive qualities of our cruisers in the Indian ocean would have affected the operations in the slightest degree. Faster ships would not have run her down any earlier, and vessels with more powerful guns would not have brought her to action an hour sooner.

The operations against Admiral Spee hardly affected the question at all. Spee did not act against commerce. He certainly made captures when enemy ships were on his track; but he never used his squadron for an organized attack upon trade. He was finally dealt with by solving the basic military problem—basic because it is the same by land or by sea—of confronting him with a more powerful force than his own.

Raiders during the War.

The attacks upon the trade routes in 1916 and 1917, by the Wolf, the Moewe and the Seealder, bear more closely on the point. Not one of these vessels had a fighting power anything like equivalent to that of a cruiser even of the 5,000 ton class. They were slower, less powerfully armed, and they had a small munition supply; and yet they were, in certain respects, the most successful of all the raiders. The Moewe's destruction of shipping does not compare unfavourably with that of the Emden or the Karlsruhe; and both she and the Wolf raided commerce with complete freedom and immunity. The Seealder was not so fortunate; but, as she was a mere sailing ship with an auxiliary motor, as she made an unmolested voyage from Germany to the Pacific, and raided commerce as she went, her career strongly reinforces the point that speed and gun-power are not the essential qualities for a surface raider.

The German attack upon the ocean highways was continued in 1917 and 1918 by U-boats of the Deutschland or cruiser type, which operated continuously in the Azores-Canary area. These vessels did not make very great use of their submarine qualities, but acted like surface cruisers to which they can be likened. They resembled the Moewe and the Wolf in that they had a great capacity for keeping the sea; but in fighting power they were even weaker.

The Power of Evasion.

From this it will be seen that the attack upon the outer trade routes produced a regular and steady influence upon the design of the vessels which conducted it. It was opened by cruisers of the Emden type; it was closed by a hybrid type which Captain Castex has described as a bad cruiser and a bad submarine. The influence

of commerce warfare upon design was manifested in a steady, progressive, decline in the tonnage and fighting power of the attacking vessels. That decline was, however, set off by a steady rise in their sea-keeping capacity. Power of evasion was the most useful quality which they could possess; and they were endowed with it by their ability to wait in hiding if the pursuit against them was strong, without thereby being compelled to break off their operations altogether.

But although this tendency was manifest, it was never strong enough to create a stabilized type. If the results and facts of commerce warfare make anything certain it is that a Moewe or a Wolf is better adapted for attacking commerce than an Emden or a Karlsruhe; but it is quite an open question whether a vessel like the Moewe is more or less suitable than a submarine of the converted Deutschland type for operations against distant trade routes. The tonnage destruction of the U-boat is certainly higher, but not very much so; and the surface raider will always possess power of evasion which is denied to a submarine. By keeping her captured crews on board for a long period of time and only sending them into harbour when she is ready to change her hunting ground, she can conceal the zone of her operations, and this is a matter of considerable importance. Sir Julian Corbett has shown that most of our counter measures against the Karlsruhe, the Emden and the Moewe were based upon the statements of liberated prisoners. Until the captors released them, we knew so little of the raiders' whereabouts that we were never able to draw up anything more than tentative schemes of searches and sweeps. To be able to accommodate prisoners in large numbers, and for a long time, is therefore a contributory to the evasive quality which raiding cruisers have striven to develop.

The Penalty of Failure.

There is another point to be considered. An unsuccessful attack upon an armed merchantman is a very great misfortune to a raider. The escaping merchantman signals the position of the encounter over the whole zone of operations, the searching vessels are supplied with up-to-date intelligence of her movements, and are put on her tracks in circumstances which give some hope of finding her. Even a prolonged action between an armed merchantman and a raider may put the raider into great danger. If the signals made by Captain Oliver, in the Clan Mactavish, on January 16, 1916, had been reported to the Captain of the Essex, the Moewe's first cruise might have ended earlier.* It is therefore a matter of very great importance to a raiding cruiser to have enough combative power to stifle all possible resistance. In this respect, the surface ship cruiser has a great advantage over the submarine cruiser. Only one merchant ship, the Demarara, escaped from the Moewe during her two cruises; none escaped from the Wolf. During her three months' cruise in the Azores-Madeira zone, U 155 made nine unsuccessful attacks; between December, 1917, and March, 1918, U 156 fought

* See Official History of Naval Operations, vol. iii. p. 268.

six unsuccessful actions in the Canaries area; Max Valentiner in U 157 was rather more fortunate, but he was four times unsuccessfully engaged in the same area, at about the same date. The records of the other U-cruisers are roughly the same; and the contrast between their performances and the Moewe's is most striking. On this point the surface raider has a great advantage, and it would seem as though the combative strength of the submarine cruiser was rather low, and needed supplementing with a few additional knots of surface speed.

A Difficult Problem.

But whatever the design of a perfect raiding cruiser may be, one thing at least emerges from the preceding survey: the heavy post-war cruiser is not suitable for the purpose of attacking commerce. Its gun-power, coal consumption, crew and equipment are many times in excess of what is required; it represents an evolution in cruiser design which has moved in the opposite direction to the evolution which I have just traced. It remains to be seen whether modern cruiser design is well or ill adapted to the defence of the ocean highways.

The problem is not an easy one. From 1914 to the armistice the defence of the outer trade routes was left entirely to cruisers of very old types and to armed merchant cruisers, and the duties on which they were engaged had no effect upon warship design. There is no evolution in the design and equipment of the defending cruiser which corresponds to the movement from the Emden to the Deutschland. It is, therefore, always open to a critic to say that the old cruiser served its purpose well enough and that it is waste of time to inquire further into the matter. Like all conservative criticism, the objection has its weak points. Old cruisers and armed merchant cruisers can, doubtless, deal with an attack on the outer routes which does not exceed the severity of the German attack; but we have no guarantee at all that British commerce on the outer highways will never be more forcibly attacked than it was by the German raiders. Because we have emerged from a struggle with an enemy whose principal effort against trade was made in the approach routes to the British islands, it by no means follows that every subsequent opponent will attack our trade in the same theatre and by the same methods. Indeed it requires no effort of political imagination to conceive of a war at sea in which the great joining points, and the most important starting points, of the trade routes—such, for instance, as the West Indies, the Rocas-Pernambuco area, or the Canaries-Madeira zone—would be theatres of a struggle as prolonged and bitter as the recent struggle in the approach routes to the British islands. An inquiry into the most suitable designs for commerce defence types is justifiable, if past history and present policies justify us in looking into the future at all.

Methods of Defence.

The defence of the outer trade routes, though static as to means, was mobile with regard to method. From August, 1914, to the date

when the Dresden was destroyed, the authorities attempted to follow the raiders wherever they went, and to run them down. The method was most unsatisfactory. Considerable cruiser forces were repeatedly despatched to the last place at which a raider had been reported; when they arrived there, the raider was somewhere else. In November, 1915, when the Moewe put to sea for her first cruise, the naval authorities had adopted a new method. Trade was dispersed along routes which gave the usual congregating points of trade a wide berth; and areas where trade was certain to collect—in spite of the dispersion of the more important freighters—were held in strength. Count zu Dohna-Schlodien, the Moewe's captain, remarked, reluctantly, that the method worked admirably. But when Count zu Dohna paid us this compliment the system was still young. Its highest point of efficiency was reached during the Wolf's raid in the Indian Ocean. During his fifteen months' cruise, Karl Nerger, her captain, captured and sank only fourteen ships—rather less than one a month; as he was never hunted and never seriously disturbed this extraordinary result can only be attributed to the scientific system of trade dispersion which was then in operation. The great lesson of the Wolf's cruise is that unless a raider can establish and maintain herself off a point where trade starts, or in a zone where trade assembles, she can be rendered almost harmless by careful dispersion. It follows, however, as a necessary corollary, that the defence must possess some type of vessel suitable for guarding these focal points.

Unsuitable Types.

Have we, at present, any notion of what its qualities should be? The results of the cruiser war give us a few indications; such as they are, they would seem to show that the existing cruiser types are not suitable. Between January and March, 1916, Count zu Dohna operated inside a zone which was watched by the Glasgow, Vindictive and two armed merchant cruisers, and they never succeeded in bringing him to action. In the following year, he revisited the zone, and again the defending cruisers failed to dislodge him. On this occasion, no fewer than eight ships were operating against him. Their superior speed, and comparatively heavy gun-power availed them nothing. The failure cannot entirely be attributed to faulty design, as reliable intelligence of the raider's movements was nearly always lacking; but there is little doubt that the cruiser forces employed were very much hampered by their rapid coal consumption, and their dependence upon the base at the Abrolhos. A type which corresponded more closely with the raiding type would surely have been more suitable; and indeed, it is almost inevitable that the design of the focal point cruiser shall, sooner or later, follow the design of its opponent. Twice in the St. Paul Rocks area the Moewe's power of evasion was pitted against the combatant strength of the watching cruisers: each time the power of evasion had the best of it. We thus arrive at the conclusion that the modern cruiser, excellent as a naval jack-of-all-trades, is not well adapted to one of the specialized duties of trade defence; and the

conclusion is very much strengthened if we assume that submarine cruisers will, in future, take the place of the Moewes and the Wolfs. It is an open question what type of surface vessels would be best adapted to deal with a sustained submarine cruiser attack in a focal area; but there can be no question at all, that if the Madeira-Canaries zone, the West Indies, or the Plate trade route were attacked by very large submarines, we should not send out 10,000 ton cruisers to deal with them.

The Policy of Convoy.

But the history of trade defence does not end at the point to which we have just traced it. Armed escort replaced the system of dispersing the freighters and of guarding the focal and terminal points. This final system was only introduced as a result of very special circumstances; and it is most improbable that it would ever again be necessary unless an opponent permanently establishes its attacking forces in the approach routes to the British islands. For this reason it is doubtful whether convoy cruisers will ever be of a special design: it is more probable that they will always be vessels collected hastily to meet a critical situation. But if the protection of our distant commerce does ever become so important that a special convoy cruiser type is designed to carry out the duty of guarding British trade, we have excellent guiding marks for its ultimate qualities. A convoy cruiser can only be designed to meet the heaviest possible opponent that can be brought against the merchantmen it is intended to protect; and its most powerful opponent will vary with the length and position of the route which it follows. We have already shown that the modern cruiser will hardly be used for distant operations against trade; but there is not the slightest reason why she should not be used for trade operations in an approach route. A Duguai-Trouin would be useless in the Rocas area; but she might work with deadly effect against convoys moving up the channel. A convoy cruiser engaged on the Plate trade route might thus have to face three forms of attack in one voyage. First, attacks from the regular trade cruiser of the Wolf and Moewe type operating between the Plate and Rocas; secondly, attacks from submarine cruisers of the Deutschland type operating in the Madeira-Canaries-Gibraltar area; and thirdly, from large cruisers of the latest type, operating in the Ushant-Scilly-Land's End zone. The type best adapted to the purpose would undoubtedly be one which was a concentration of defensive qualities.

Speed and Endurance.

If the question of essential qualities corresponding to essential duties were boldly solved, the convoy cruiser's displacement would not well be less than that of her most powerful opponent, that is, 10,000 tons; but her speed could be reduced to 15 knots at the most; every ounce of the displacement thus released would doubtless be invested in gun-power, and armour—to give her the advantage over

opponent number three, and in underwater protection—to give her the advantage over opponent number two.

A survey of the duties which have to be performed in attacking and defending trade thus leads to the following conclusion. A prolonged and bitter struggle on the outer trade routes—equivalent in intensity to the struggle on the approach routes during 1917—would doubtless create specialized types, corresponding to the special tasks of the business. The combative strength of the attacking types would not be great; enough gun-power to overcome the resistance of an armed merchantman, enough speed to keep out of the way of a convoy cruiser; and a very high coal endurance would be all that was required. The focal point type of cruiser would not differ greatly from her most probable opponent: she also would be of moderate displacement, and comparatively low combative power and very great sea-keeping capacity. The convoy cruiser with its heavy displacement and gun-power would most resemble the purely military type of cruiser which all Naval Powers are at present building.

A. Colquhoun Bell,
Lt.-Com., R.N.

CHAPTER VIII.

THE NAVY AND A MINISTRY OF DEFENCE.

THERE is a tendency in many, when things have gone wrong, to cry for some man built in a colossal mould, or to erect a gigantic Ministry with far-reaching powers, or to superimpose on a groaning social structure some vast new organization—in a word, to trust to some external system of reconstruction rather than to the spirit of regeneration from within.*

Nowhere is this conception more evident than in the idea of a Ministry of Defence. In spite of the criticisms of men of the calibre of Viscount Haldane and Earl Balfour, it remains with us as one of the by-products of the war. It would tend to its more lucid discussion if its advocates, instead of confining themselves to vague generalities, and the reiteration of comfortable words such as "co-ordination," would expound its advantages in terms of the actual conduct of particular operations of war, as, for instance, how a Ministry of Defence would have been able to reveal to the French General Staff the shortcomings of Plan 17; or why such a Ministry should have been able to arrive at a better idea of what the Queen Elizabeth could or could not do than Mr. Churchill; or to what degree it could have foreseen the necessity of convoy or been able to supply an antidote to the submarine. All these questions were so intimately related to technical considerations that if the soldier or sailor could not solve them, it is quite certain they could not have been solved by a Ministry of Defence. Its supporters are certainly not signalized by any severe unity of thought.

The Geddes Committee gave it the somewhat indeterminate task of "allotting appropriate responsibility" to each of the fighting forces. The Ministry was to have "only a very small office" with a Statistical Accountant and a Council of sub-Ministers.† Now, statistics may be very useful, but they cannot take the place of skilled professional knowledge, and one can remember, when Sir Eric Geddes was First Lord, statistics proving, to the astonishment of submarine officers, that submarines were more dangerous by night.‡

* "It is within the Navy and Army alone that such a spirit can grow up." Haldane, May 5, 1920.

† Geddes Report on National Expenditure, 1922; Salisbury Report.

‡ At night no torpedo missed, at least not statistically.

"A COMMON STAFF BRAIN."

Mr. Churchill again hoped to find in a Ministry of Defence a "common staff brain" to supply the Cabinet with responsible advice.* But what is a "common staff brain"? Does it exist? Who is sufficient for these things? Can any one encompass the experience of two or even more different services? The Dardanelles may be quoted. But the Dardanelles is the outstanding example of the negation of the staff. The "common staff brain" initiated the operation over the heads of the staffs. The staffs, naval and military, had little to do with it. And the objection to a Ministry of Defence is precisely this—that the real staffs might have still less to do with it. The failure of the Dardanelles cannot be debited to the shortcomings of a military staff which was not consulted, or of a naval staff which dared not give a decisive opinion.

The worst, however, that can be said of the above propositions is that they are vague. The idea, however, that finds an exponent in General Sir Frederick Sykes can only be described as fantastical. This is nothing less than a fusion or amalgamation of the existing service departments with a "definite unified supreme control" exercised by a Defence Ministry, with the Prime Minister as independent Chairman and "a joint staff which would really think out defence as a whole."†

This conception ignores two very practical points. Firstly, war on sea and war on land are two different spheres of work. The only occasions in which their orbits cross are in landing operations on a beach and in bombardments supporting a military attack, and *there* is no insuperable difficulty in teaching the two services to work on such occasions on uniform lines and in close co-operation. In the ordinary work of the Navy and Army a "composite" operations division would be absurdly futile. Secondly, what would be the relation of this "joint composite staff" to the General Staff or Naval Staff proper? Anything of the sort must tend to shift the centre of gravity of advice and decision from the Admiralty and War Office. But one thing is certain. There can only be one centre of planning and control for each service. That centre must be in the closest touch and sympathy with the commanders who execute its proposals, for plans and ideas grow partly out of action and cannot be divorced from it. In other words, you cannot shift the centre of control in things naval and military from the Naval Staff or Imperial General Staff.

WAR ON SEA AND LAND.

It may be contended that war on sea and war on land are all one. The answer is that they are not. They are entirely different and each is a life calling. The soldier and sailor deal with separate spheres of work, and fusion of the staffs would merely mean confusion. The gravest complications of the war arose from trying to

* Mr. Churchill, 21/3/22, *cit.*, Salisbury Report, 10.
† Salisbury Report, ii.

discover something better than good, and through permitting extraneous advisers to creep in between the Cabinet and the responsible staffs. If the men on a Naval Staff are incompetent, others must be found to take their place; if the Naval Staff is too ignorant of military work, or the General Staff of naval work, this must be remedied by a better system of staff training, but nothing can be more essentially vicious than to confront the Naval Staff or the General Staff with another "Joint Staff" initiating plans over their heads. Field-Marshal Sir William Robertson is very explicit on this point. "The formation," he says, "of a combined Imperial General Staff consisting of Military, Naval, and Air Force officers, working under a Chief, responsible to the Government, or to a Minister of Defence, for working out plans of operations on land, on sea, and in the air is fantastical as well as dreadfully mischievous." "This staff would directly interfere between the three Chiefs of Staff and the Cabinet, and there could be no more pernicious system than that." *

Sir Frederick Sykes's proposal bears an unmistakable likeness to an earlier one,† in which an Imperial Council was to be assisted by an Imperial War Staff formed of soldiers, sailors, and airmen to conduct all the necessary operations of war, "to be organized into Departments, each dealing with all three services and each concerned with different branches of the art of war, such as Operations, Intelligence, and Organization." Here the fallacy is too patent to need refutation. Operations and Intelligence are not "branches of the art of war," but aspects of staff work. They simply constitute a convenient framework for the staff work of any particular service, and nothing is to be gained by taking the framework and fitting an amalgamation of all three services into it. Military and Naval Intelligence have little in common except the name "intelligence." For ninety per cent. of naval operations, a military staff officer would find himself entirely at sea. As Lord Haldane has pointed out in opposing the idea of a Minister of Defence, "a staff can only grow up efficiently within the atmosphere of its own service." "To talk of a joint naval and military staff is to indulge in confusion of thought, because two-thirds of the problems with which the Navy has to deal have nothing whatever to do with military operations on land, and are best kept apart from them." ‡ Lord Balfour is equally opposed to it, pointing out that "modern war involves every sphere of national activity," and not merely the navy, army and air force.§ Lord Thomson cannot conceive of a Minister of Defence who would be able really to encompass such an office. "He would have to think in three dimensions and ponder problems of high strategy on land, blue water, and in the upper air." ||

* Salisbury, 16.
† Ministry of Defence, *The Times*, 28/1/1919.
‡ Parliamentary Debates, House of Lords, May 5, 1920, Vol. 40/144.
§ Debates, H. of L., *The Times*, 17/6/26.
|| *Idem.*

IMPRACTICAL PROPOSALS.

An equally formidable phalanx of the best service opinion is on the same side, that is, in favour of strengthening the hands of co-ordination through the medium of the Committee of Imperial Defence. Sir William Robertson advocates a Council of Imperial Defence with a technical committee including a senior officer of each of the three Services "whose experience would give valuable help." * It may, however, be suggested that a naval officer in such a post would have to be deputed by the Chief of the Naval Staff, for he would be bound to work in close co-operation with the Naval Staff. This point is grasped by Major-General Sir John Davidson, who is in favour of a Standing Joint Defence Sub-Committee of the C.I.D. formed of the First Sea Lord, the Chief of the Imperial General Staff, and the Chief of the Air Staff, *or officers appointed or deputed by them.* The tasks he gives them are no light ones, and include a study of the "effect of scientific progress and inventions." The view of the Government is summed up in the Salisbury Report. Briefly, it is considered undesirable and impracticable to make the Ministerial heads subordinates of a Minister of Defence.† Amalgamation of the services is regarded as equally impracticable, but it is thought that the system of co-ordination requires to be defined and strengthened. With this in view, the three Chiefs of Staff are to be enjoined under a special warrant "individually and collectively to work towards a common end." Unfortunately, as Sir John Davidson has pointed out,‡ the joint responsibility has not been made effective by means of any joint machinery for the purpose. His later recommendations suggest the institution of a special section of the Operation Staff—naval, military and air, to be set up by the three services working together under one roof at questions of joint import, in order that the three Chiefs of Staff might present well-balanced and unanimous recommendations to the Committee of Imperial Defence.

This is an entirely reasonable suggestion, but it must be remembered that the number of officers capable of such a task is small and such officers are usually fully employed in the work of their own service.§ St. Vincent used to insist on the dependence of "Measures on Men," meaning that a new organization or plan of reform is largely dependent on whether men are available to carry it out. A section of this sort would require a very capable officer, in close touch with the views of his own Staff, directly attached to the Chief or Deputy Chief of the Staff of his own service, and with a power not only to grasp the problem involved, but to discover some sound solution. These difficulties, however, are not insurmountable, and it is on these lines, and not in the direction of a Minister of Defence, that a higher degree of co-ordination may be found.

* Salisbury, 13.

† Salisbury, par. 36 (*e*).

‡ "Imperial Defence and the Co-ordination of the Three Services." Major-Gen. Sir John Davidson, K.C.M.G., M.P., *Journal* of R.U.S.I., Feb. 1926.

§ Compare the difficulties of the First Lord (Thomas Grenville) to find admirals for the various commands. Grenville to Marquis of Buckingham in Oct. 1806.

Co-ordination of Services.

There remains another aspect of the question which has been fully dealt with by the Weir Report,* namely, how far the amalgamation of the common services of the Navy, Army, and Air Force, such as Intelligence, Supply, Transport, Education, Medical, and Chaplains, can be carried out so as to reduce the cost of present triplication. The committee arrived at the conclusion that in existing circumstances "the amalgamation of the common † services of the three Departments is not advisable," and doubted "if any substantial economies would thereby be effected." The Committee made an exhaustive study of the following services—Medical, Chaplain, Educational, Intelligence, Supply, Transport, Recruiting, and Works. In the case of the Medical Services, it pointed out that the services work in different spheres and a large measure of their efficiency depends on a cumulative experience of the special requirements of the particular service. Thus, naval hygiene and ventilation on board ship is an important subject to a naval medical officer, while the army man would lay stress on camp sanitation and rapid evacuation of sick and wounded. The common use of hospitals is already practised.‡ There is a twofold service, but there is no duplication. In the case of Educational services, amalgamation is regarded as impracticable, as the curriculum of the schools consists largely of specialized technical instruction. So, too, with Intelligence, whose highly technical character in each service requires the employment of officers of that service.

These conclusions demonstrate the confusion of thought in those who talk loosely of these services without specifying the speciality of their nature. There is no such thing as Intelligence or information in the abstract. There is such a thing as military intelligence or naval intelligence, or medical intelligence, where a medical man will discover and convey in a single word what a non-medical man will not so much as see. Intelligence to be of use must be directed towards some specific end and must be collated by men who are versed in its use and application. This word is subjected to constant misuse by the advocates of amalgamation. One even meets with the extraordinary conception of some great pool of "intelligence" from which every Government office could draw at will. Intelligence to be of use in any sphere of work must be collected by persons who know the work and must be digested and "vetted" by persons with a cumulative experience of the particular intelligence involved. Card indexes cannot take the place of skilled experience.

* Report on the Amalgamation of Services common to the Navy, Army, and Air Forces, 1926, Cmd. 2649. The date of the Report was Jan. 2, 1923.

† Meaning presumably the "similar" services.

‡ Thus at Chatham the military use The Royal Naval Hospital, and naval men in London are sent to Millbank.

An Absurd Proposal.

The idea of reducing all Intelligence—naval, military, war (why not add diplomatic and economic) to one common denomination, in which a common agent collects everything for everybody and discharges it into a vast common card index, is utterly absurd. One might equally well regard it as a duplication of effort to have a naval historian and a military historian. The advocate of amalgamation might argue, "Is not History a single subject?" The answer is that it very decidedly is not. Military History is one thing; Naval History another. The methods no doubt are the same, but the materials are not, and the general substratum of ancillary knowledge required is quite different. Each service represents a vast congeries of specialized effort, and suggestions for the "unification" of "common" services come from those who know very little about the specialized needs of either.

Precisely the same objection applies to Supply. According to the Weir Committee, the actual needs of the three services differ fundamentally not only in their function, but also in their organization and geographical distribution. In other words, a storekeeper thoroughly conversant with the needs of a ship in terms of wire, oil, coal, rope, paint, disinfectant powder, scrubbers, and the thousand and one articles pertaining to the sea is not necessarily competent to gauge the requirements of a mountain battery or a company of bridging engineers.

Again, the Committee pointed out that in all technical requirements, the technical authority who draws up the specification must be in intimate touch with the user of the article.* In other words, a scientist must go to a scientific instrument maker and not to a general commodity store dealing in things made of brass and iron. Grave difficulties are involved in the idea of a single Supply department not directly and strictly responsible to the service that it supplies. The Committee reported that there was no evidence whatever of competition in bidding between the three services, and if any instances occurred, the Contracts Co-ordinating Committee is competent to deal with them.

The Work of Supply.

But the most illuminating work of the Weir Committee is to be found in the careful analysis of the nature of the work of Supply in the three services. In order to avoid talk of triplication "based on mere generalizations and ending in wholly unconvincing results," it examined carefully the salient characteristics of the Supply Departments. With this in view it classified the supply work into three groups.

Category I., Highly Technical supplies (such as design of warships and aircraft) where there could be no question of overlapping.

Category II., consisting of Intermediate Stores (such as machine guns, structural material) which, subject to special arrangement, might be considered as "common stores."

Category III., consisting of stock commodities (such as ironmongery, tools, furniture).†

* Weir, 45.

† Weir, 50.

Here are the results of an exhaustive investigation. Category I., in the case of the Navy, includes 83 per cent. of the Supply Expenditure; in the case of the Air Force 63 per cent.* Of the Quartermaster-General's expenditure 76 per cent. goes in the purchase of food in local markets, where there can be no question of overlapping. Again, of the total supply expenditure of the three services, 60 per cent. is expended on "Design, Technical and Experimental" work. The Master-General of Ordnance's expenditure under this head is £800,000,† of which £645,000 (or 80·5 per cent.) is spent on establishments ‡ *maintained jointly for all three services*, which are, therefore, already co-ordinated and administered under joint control. The establishment cost of obtaining supply in Categories II. and III. is less than 3 per cent. of the cost of supply.

To sum up, the Weir Report decided, finally, that the amalgamation of supply services would diminish efficiency, and that any general pool of common stores was impracticable. It recommended the constitution of some eleven committees to confer on questions jointly affecting any particular spheres of work,§ a measure which may result in some minor economies, but means a very considerable expenditure of time and labour.

One of the features of the history of the question is the growing tendency to take refuge in words involving large billowy abstractions, such as Defence, Supply, Labour, Employment, and to find a panacea for all ills in setting up a Ministry to deal with them. This is specially marked in the Reconstruction Report of 1918,‖ where there is actually serious mention of the idea of a Ministry of Employment *"to relieve other Departments of all their functions as employers of labour,"* as if efficiency in any sphere of work can ever be divorced from the direct and intimate supervision of those employed in it.

THE MEANING OF ECONOMY.

Economy is not merely to be measured in terms of national expenditure. It must be measured in terms of time, energy, and efficiency in results achieved. The larger the Department, the greater the loss of time, energy and efficiency. He must be very simple who believes that a Ministry of Defence would be content with a small office for the Minister and another small one for a "statistical accountant." As Moltke used drily to observe, "Gentlemen, that is not how things work." There are other grave political objections to the proposed system, for it would create a Minister whose position and powers would perpetually challenge the authority and primacy of the Prime Minister. The idea of seeking increased efficiency in the corridors of a huge new centralized Government

* From diagrams, Weir, 91.

† Weir, 51.

‡ Ordnance Committee, Research Department, Design Department, Experimental Establishment.

§ Technical Co-ordinating Committees on Foodstuffs, Clothing, Transport, Stores, Medical Stores. Joint Committees on Medical, Chaplain, Education, Intelligence, Works.

‖ Report of Machinery of Government Committee, 1918, Cd. 9230.

department is superbly absurd. Nor will economy be found there. There is only one road to it. Every single Government department must economize within its own sphere, and loans of millions to corrupt local councils, which will never be repaid, must become a thing of the past.

ALFRED DEWAR,
Captain, R.N.

Authorities.—Reconstruction Report, 1918, Cmd. 9230; Parliamentary Debates (Haldane), May 5, 1920; Report on National Expenditure (Geddes), 1922, Cmd. 1581; Salisbury Report on Defence, 1924, Cmd. 2039; Weir Report on Amalgamation of Services, 1926, Cmd. 2649; *Times*, June 17, 1926 (Lords Haldane and Thomson); Journal of R.U.S.I., Feb. 1926 (Major-Gen. Sir John Davidson).

CHAPTER IX.

The Wage-Earner and the Navy.

If the average intelligent taxpayer were asked how the money voted for the Navy is spent, he would probably compile a list which would include the pay of the *personnel*, the cost of the fuel and of the upkeep of the Fleet, the wages and working expenses in dockyards, gun and munition factories, and the payments to shipbuilding, engineering, and armament firms for new construction. It is doubtful whether his imagination would take him much further. A vast proportion of the unimaginative public doubtless conceives that most of the money goes into the pockets of naval officers and men, and that the rest is spent in the dockyard ports. Actually, the large sum which the nation pays each year for sea security is disbursed over a very wide area, and the maintenance of the Navy provides a living for a large number of wage-earners in almost every part of the country.

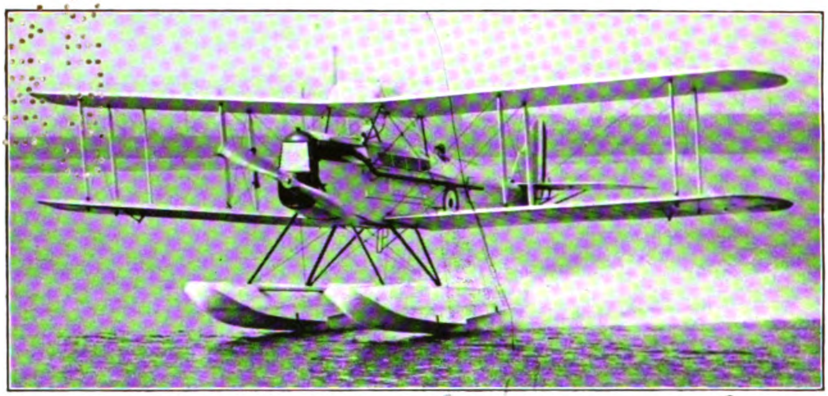
The Support of Navy Homes.

To begin with, it should be realized that the pay and wages of the lower-deck ratings of the fleet are the mainstay and support of very many simple homes, and that these are by no means confined to any one district. The *personnel* of the Navy is recruited from England, Ireland, Scotland, and Wales, and it would be hard to find a town or even a village which knows not the sailor's uniform, even though naval families cluster most thickly round Home Ports, like Portsmouth, Chatham, and Devonport.

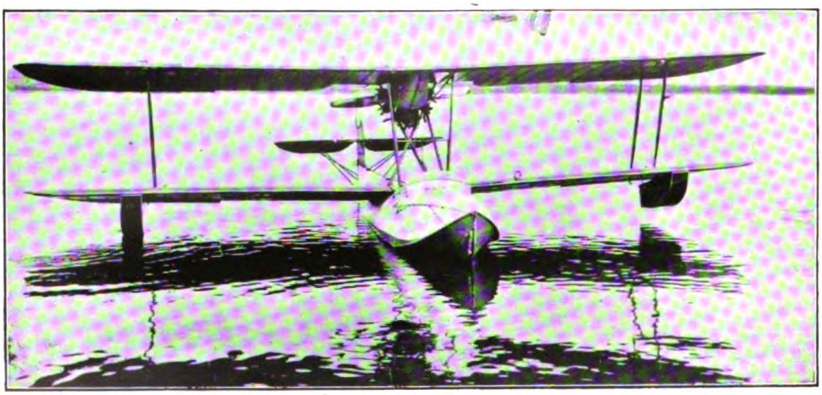
The following table shows the direct expenditure (*i.e.* the Admiralty payments) during the current financial year as they are apportioned amongst the Navy's wage-earners :—

	£
Pay and wages to lower-deck ratings	9,069,000
Pensions, gratuities, etc., to ditto	4,300,000
Dockyard labour (below foremen), including police	6,555,000
Labourers in armament establishments	1,090,000
Victualling yard labourers	216,000
Medical establishment wages (other than salaries)	172,000
Admiralty office messengers, office keepers, etc.	50,741
Water police	15,000
Employees in lighthouses and lightships	7,000
	£21,474,741

In addition to the above, a sum of £2,000,000 is being spent on new works ; of this, it is estimated, between 60 and 70 per cent. will go in wages.



DE HAVILLAND SEAPLANE.



CANADIAN-VICKERS "VEDETTE" BOAT SEAPLANE.

Royal and Private Dockyards.

Shipbuilding, outside the Royal Dockyards, is a trade which naturally centres round our chief waterways and those localities on their banks which are conveniently close to the sources of supply of raw materials. In the Mersey district one of the only two battleships being built in the world, H.M.S. Rodney, is under construction. In answer to a question in Parliament, it was officially stated that this order would give employment for three years to an average of about 2,100 men, and that about £1,100,000 would be spent on wages. The second battleship, H.M.S. Nelson, is being built at Newcastle-on-Tyne. The Tyne, in common with most shipbuilding areas, has felt sorely the post-war depression in its chief industry.

The belated cruiser construction programme, introduced by the Labour Government in 1924, has been a godsend to several districts. Not only has the revival of naval orders conserved great firms and their plants, which are vital both to the economic life and to the sea security of this country, but they have brought renewed hope and prosperity into many a humble dwelling. In addition to one of the new cruisers, laid down this year, the Newcastle district is furnishing the propelling machinery for two other cruisers of last year's programme.

The Clyde shipyards have been fortunate in securing no less than four 10,000-ton cruisers, two being to the order of the Australian Government, and a destroyer. The remaining contract-built cruiser is being built at Barrow, and a second destroyer at Southampton.

Wide Range of Employment.

Some idea of the immediate effect on employment of this new construction may be gathered from the statement of the Parliamentary Secretary to the Admiralty, made in the House early last year. In this, he said that by laying down the five cruisers of the 1924–25 programme employment would be provided for approximately 9,200 men, made up of 1,750 in the Royal Dockyards, 1,700 in private yards, and 5,750 in auxiliary trades. Of the large sum spent annually in private yards, such as those mentioned above, it is estimated that about 65 per cent. goes in wages, but this varies greatly owing to the differences of skilled labour and highly paid designing work required in the various items.

The ramifications of orders in connection with the construction and maintenance of the fleet are too numerous to trace in detail, but the following list of some of the main commodities needed in the course of the building, equipment, and employment of a warship, and the districts from which they are drawn, will show how widely the sum spent on the material side of the Navy is dispersed :—

Commodity.	Districts furnishing supplies.
Coal	Glamorganshire, Monmouthshire, Yorkshire, Nottinghamshire, Derbyshire, Northumberland, Durham, Scotland.
Steel and Iron	Sheffield, Glasgow, Glamorganshire, Durham, Birmingham, Wolverhampton, Staffordshire, Cheshire, Monmouthshire.

Shipbuilding and Machinery	Tyne and Clyde Districts, Birkenhead, Yorkshire, Lancashire, Bath, London.
Armour and Armaments .	Sheffield, Manchester, Glasgow.
Instruments	London, Glasgow, Birmingham.
Provisions.	Agricultural counties.
Clothing and Textiles . .	London, Belfast, Dundee, Lancashire, Somerset, Carmarthenshire, Yorkshire, Devonshire.
English Timbers	Sussex, Surrey, Northamptonshire, Hampshire, Somerset, Devonshire, and other counties.

Supplies from Empire Overseas.

The Navy's needs, however, are not met entirely from home resources. The Empire overseas also comes in for a share of orders. Typical of these are :—

Dominion.	Naval supplies.
Australia	Wool, flour, leather (hides), lead, zinc.
New Zealand	Butter, cheese, frozen mutton.
Canada	Flour, timber, cheese, copper, nickel.
West Indies	Cocoa, sugar, mahogany, coffee, lime juice, rum.
South Africa	Tobacco, coffee, flax.
India	Hemp, rice, tea.
Ceylon	Tea.
Strait Settlements and East Indies	Rubber, oil, tin.

All the above commodities required by the Navy have to be transported to England by sea, and if we also take into consideration the fact that our warships are almost entirely oil-burning, and that the greater proportion of their fuel and lubricating oil has to be imported from countries outside the Empire, we shall realize that the British Mercantile Marine, as the Admiralty's main sea-carriers, also secures an appreciable share of Naval Estimates.

There is hardly a trade—riveter, boiler-maker, shipwright, miner, painter, postman, bricklayer, fisherman, farmer, dairyman, spinner, butcher, railwayman, civil-service clerk, bootmaker, publican, and a hundred more—which does not participate in the taxpayer's quota to the upkeep of the Navy.

The pacifist and idealist will argue that the money voted for the Navy could be so much better spent on "productive" employment. The answer is that no sane man builds a factory and starts a "productive" business without insuring his premises against burglary and fire or grudges paying his contribution towards police protection. The "strong man armed" lives at peace with his neighbours; the nation that would remain strong and prosperous cannot afford to lay itself open to the alien plunderer or to the international communist. Quite apart from the fact that, if the pacifist had his way, hundreds of thousands of men, as well as very many women, who are now in naval employ would be thrown out of work with no alternative occupations, each and all of the Navy's wage-earners are, directly or indirectly, contributing to the safety, honour, and welfare of our country.

Edward Altham,
Captain, R.N., C.B.

CHAPTER X.

The Seaplane, Flying Boat and Amphibian.

The foundation of the British Empire and its subsequent growth were based on sea-power backed by the great shipping industry of this country. The discovery of new countries, the creation of seaports, the foundation of flourishing cities, all, or nearly all, had their beginnings by the water—sea, lake or river. The rapid technical progress now being made in flight has definitely established the indisputable fact that with the degree of reliability that is being maintained under all conditions, aircraft can be used with great advantage in many directions. There are abundant proofs of this in commercial air services, and in Mr. Alan Cobham's several long-distance flights culminating in that to Australia and back.

Aviation and Peace Demands.

"Air power, like sea power, to be effective and permanent must be based on a sound and economic development for peace uses." In this connection it is somewhat disheartening to note that up to the present the development of the seaplane, flying boat and amphibian has been mainly for purely naval purposes. The technical progress which has been made, however, is now of sufficient importance to enable one clearly to visualize some "peace uses." In Canada, under the very able and far-seeing auspices of the Canadian Air Board, full use has been made of the lakes, themselves forming natural aerodromes, for the operation of flying boats specially constructed by Messrs Canadian Vickers, Ltd., of Montreal, for forestry patrol, fire-fighting and aerial survey services run both by the Federal as well as by the Provincial Governments. The work done and now in progress has stimulated certain commercial undertakings to purchase these craft, with the dual result that valuable economic operations are in progress with a small constructing industry making its beginnings. In other parts, such as Central Africa, the seaplane is to be used over part of the route so gallantly flown by Sir Pierre Van Rynveld in 1920, with the Vickers-Vimy-Rolls, followed last year by Mr. Alan Cobham in his D.H. 50.

These pioneer flights in aeroplanes showed that communications by air could be opened as a practical proposition. The careful air survey made has shown that, at any rate for the Kisumu-Khartoum stretch, seaplanes could most suitably be used, based on existing water communications, and mails, passengers and goods be fed up to the natural air harbours. This line is to be equipped with the now famous D.H. 50 'plane, and has the support of the Uganda,

Kenya and Sudan Governments. Again, the flight from England to Australia recently accomplished on a commercial seaplane brings into prominence various points in our Empire between which communications can be greatly speeded up by seaplanes at first and later by large flying boats—to give one instance only—Calcutta to Rangoon.

The Paying Load.

Turning to the more technical side, the table below gives an idea of the paying load, over and above an allowance for fuel for 500 miles cruising and of 200 lbs. weight for wireless and equipment.

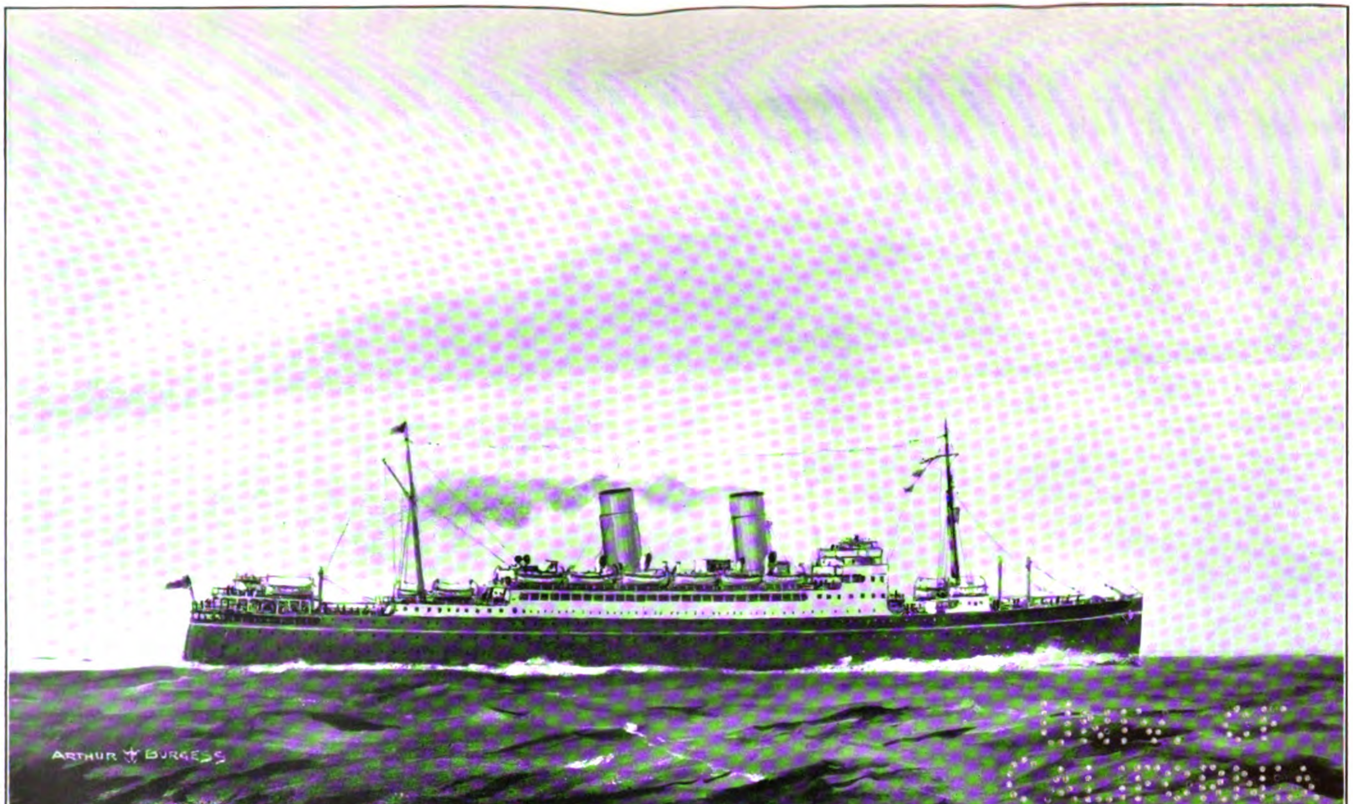
	Paying Load in lbs. normal HP.	
	Single Engine.	*Twin Engine.*
Seaplane Float	1·56	—
Boat Amphibian	2·04	—
Boat	2·64	2·03
Landplane	2·28	4·00

With the successful application of duralumin to the construction of floats and hull, seaplane design now proceeding shows such advance as to promise reasonable comparison with landplanes and makes it certain that a machine of good commercial value can be produced. Given this, then, the large boat seaplane—a type which has often proved its seaworthiness and consequent safety—could operate on "all-sea" routes with enormous advantage in speed over shipping, while the smaller amphibian boat seaplane would seem eminently suited for work over country dotted with lakes as in some parts of Canada.

In the numerous cases of routes following large rivers through broken or wooded country the easily manœuvrable float seaplane would be desirable, each of the foregoing three examples being a case where the seaplane has definite advantages over the landplane.

On the other hand, of course, it is hardly necessary to remark that there would be a vast number of routes for which the landplane is pre-eminently suited, and hence it will be seen that all types of aircraft can play their parts in commercial and social development and that the desirable and necessary inter-locking of air routes will call for very careful and comprehensive planning.

P. D. Acland.
Captain.



(From a drawing by Arthur J. W. Burgess.)

THE NEW CANADIAN PACIFIC PASSENGER LINERS TO BE PROPELLED BY TURBINES USING STEAM AT 350 LBS. PER SQ. IN.

(Building by John Brown & Co., Ltd., Clydebank, and Wm. Beardmore & Co., Dalmuir.)

[*See pages* 172 *and* 186.

MERCHANT SHIPPING SECTION.

CHAPTER XI.

The World's Mercantile Marine.

Writing soon after the abortive General Strike with its millions of direct money loss to the community; writing in the midst of the Coal Strike with its incalculable possibilities of damage to the future trade of this country; writing with all this as the culmination of 6 years of unparalleled industrial depression, it is impossible to regard the situation without alarm—but it is equally impossible to escape a feeling of wonder. It is alarming to think of the supreme difficulties of our time, but it is nothing short of extraordinary that at such a time there should be so complete a divorce of party politics from practical economics. It is astounding that at a time when economic necessity is the principal plank in practically every political platform, there should apparently be so little general understanding of the fundamental truths of economics. A hundred years ago, England was already developed almost to the full as a purely agricultural country. The record of the past hundred years is one of industrial expansion and of exploitation of oversea markets in countries which were still occupied with their internal development. In that expansion the trade of this country possessed two overwhelming advantages—cheap coal and a pre-eminent mercantile marine. It was because of the necessity to find overseas markets that the fleet came into being; it was because of the possession of cheap coal that Great Britain was able to assume a leading position as the world's supplier and carrier.

But it requires little discernment to perceive that to-day the situation has altered in its very essentials. World trade has contracted, following the disastrous European War. Our coal is no longer cheap, while the power resources of other countries are fast being developed. Furthermore, the great expansion in the use of oil-fuel both as bunkers and in motorships has seriously affected the coal export industry of this country. The motorships and steamers fitted for oil-fuel burning now in existence would, if using coal, require (in normal trading conditions) bunkers corresponding to, say, one-sixth of the total coal raised in this country for all purposes, or roughly one-half of the coal exported from this country either as bunkers or as cargo.

While of course the whole of the decrease from this cause is not borne by Great Britain, it is inevitable that a serious contraction in the coal export of this country should result. This is surely clear even to the uninitiated, and it is strange that motives of self-interest should not be sufficient to prevent the present internal dissensions

by which our competitors in the world's markets reap so much benefit.

There appears to be only one excuse for the failure to appreciate the character of the present situation—and that is the late war. The thought and energy of the majority of our political, social, and industrial organizations seem devoted to the endeavour to return to the *status quo ante bellum.* There can be no such thing as a return to pre-war conditions; the Moving Finger has written. Few people seem to realize that even before the war the economic system was already overstrained, and apart from certain special and isolated phenomena the economic effect of the war was, broadly speaking, merely to exaggerate and accelerate processes and tendencies already at work. There are greater things than even a world war, and the inexorability of economic law is one of them. Until we are prepared to realize that the war is not the mainspring of our difficulties (which are rather the result of our own ignorance); until in other words we are able to make a correct diagnosis of our industrial disease, we cannot hope for any cure.

It may be argued that this is stating a national difficulty to which there is a plain and obvious answer from the world point of view—the answer being that Britain's day is done and that other countries will henceforth secure the mercantile supremacy which we have so long enjoyed. But this is surely very far from being the case. So long as nations are not fully developed internally, they are not driven by economic necessity to adventure overseas. The whole tendency of modern industrial organization is towards specialization, and there is every reason to believe that what has been found best industrially will also be found best internationally—indeed, even now we speak of a "rubber-growing" country or a "wheat-producing" country. Why should not countries specialize as well as industrial organizations? If this is true, the obvious course of development is for Great Britain to specialize in ocean-carrying and its allied industry of shipbuilding, since the needs of our far-flung Empire alone would demand a merchant fleet amounting to some 75 per cent. of our present tonnage. And provided that we carry out these functions in a sufficiently economic manner, it is surely to the world's interest that this form of specialization should be encouraged.

The World's Merchant Fleet.

It will thus be seen that the shipbuilding and shipping industries are vital factors in the problems which are at present vexing statesmen and industrialists the world over. Correctly interpreted, movements in world shipping and shipbuilding form one of the best guides in assessing the trade position at its true significance.

Turning then to a review of the world's merchant fleets, it will be seen from Table I. that whereas in the middle of the year 1914 the world possessed a total of some 42½ million tons of effective merchant shipping, by the middle of 1926 this had increased to over 59 million tons. In the British Empire, however, the tonnage had remained approximately stationary, apart from a small and

natural increase in Dominion shipping. The outstanding feature of the figures is the expansion of the United States merchant fleet from under 2 million to over 11 million gross tons.

TABLE I.—SEAGOING STEEL AND IRON STEAM AND MOTOR TONNAGE OWNED BY THE PRINCIPAL MARITIME COUNTRIES.*

(Thousands of gross tons, *i.e.* 000's omitted.)

Country.	As at June, 1914.	As at June, 1921.	As at June, 1923.	As at June, 1925.	As at June, 1926.
Great Britain and Ireland	18,877	19,288	19,077	19,274	19,237
British Dominions *	1,407	1,950	2,219	2,230	2,325
British Empire	20,284	21,238	21,296	21,504	21,562
United States *	1,837	12,314	12,467	11,605	11,111
Austria-Hungary	1,052	Nil	Nil	Nil	Nil
Denmark	768	866	920	1,008	1,036
France	1,918	3,046	3,265	3,262	3,303
Germany	5,098	654	2,496	2,993	3,049
Greece	820	576	743	890	917
Holland	1,471	2,207	2,606	2,585	2,552
Italy	1,428	2,378	2,788	2,894	3,125
Japan	1,642	3,063	3,402	3,741	3,806
Norway	1,923	2,285	2,299	2,555	2,748
Spain	833	1,094	1,169	1,120	1,103
Sweden	992	1,037	1,092	1,215	1,260
Other countries	2,398	3,459	3,396	3,413	3,544
Foreign total *	22,230	32,979	36,643	37,281	37,554
World's total *	42,514	54,217	57,939	58,785	59,116

The changes are perhaps more clearly shown by reference to Table II., from which it will be seen that the smaller countries practically all show big increases over their pre-war fleets. It is indicative of the artificial character of the huge increase in United States tonnage that there has been a drop of nearly 1½ million tons since the middle of 1923. It is also significant that Germany now possesses some 60 per cent. of her pre-war amount of merchant tonnage, in spite of the fact that by the Treaty of Versailles she was mulcted of roughly 4½ million gross tons.

The increase to more than double the pre-war fleet in both Italy and Japan is also of interest, particularly in view of the subsidy policy which is at present dominating the shipping position in Italy.

OIL TANKER TONNAGE.

In last year's "Annual" it was pointed out that to a certain extent the increase in the world's fleet above the 1914 figures was justified in spite of the fact that general world trade has not increased. The world is producing and using roughly 3 times the quantity of oil which was produced in 1913, and the transport of

* Sailing vessels are not shown, as there are now only 2½ million tons owned in the world. American and Canadian Lake vessels are *not* included.

TABLE II.—SEAGOING STEEL AND IRON STEAM AND MOTOR TONNAGE OWNED IN EACH OF THE PRINCIPAL MARITIME COUNTRIES, EXPRESSED AS A PERCENTAGE OF THE AMOUNT OWNED IN 1914.

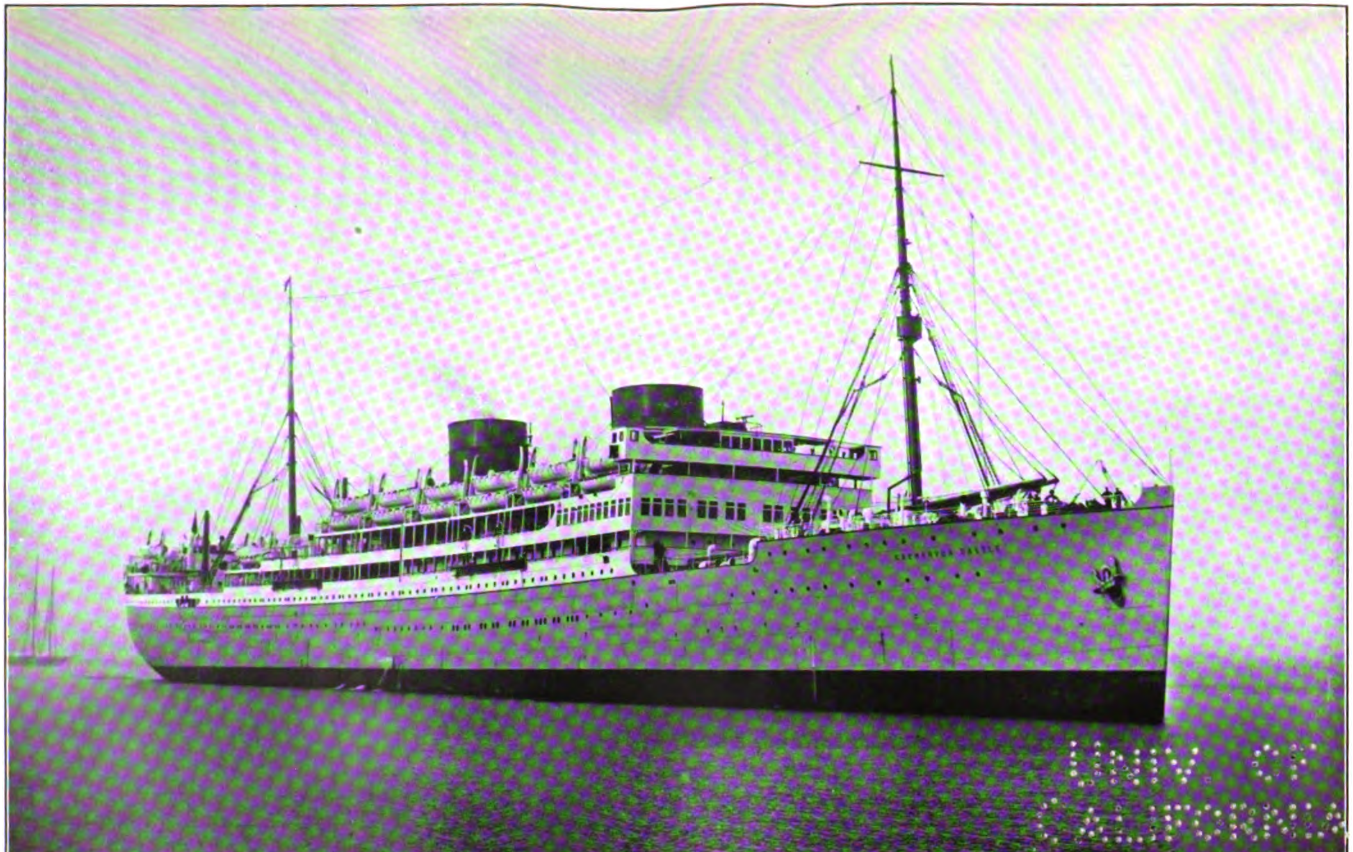
Country.	Percentage.		
	June, 1921.	June, 1925.	June, 1926.
Great Britain and Ireland	102·4	102·1	101·9
British Dominions	138·6	158·6	165·2
British Empire	104·7	106·0	106·4
United States	670·6	631·8	605·0
Denmark	112·8	131·2	134·9
France	158·8	170·0	172·2
Germany	12·8	58·7	59·8
Greece	70·2	108·6	111·9
Holland	150·0	175·7	173·4
Italy	166·6	202·6	218·8
Japan	186·6	228·0	231·9
Norway	118·8	132·8	143·0
Spain	123·8	126·9	124·9
Sweden	104·5	122·4	126·9
Other countries	144·2	142·3	147·7
Foreign countries	148·3	167·7	168·9
World	127·5	138·3	138·9

TABLE III.—GROSS TONNAGE OF OIL TANKERS, OF 1,000 GROSS TONS AND ABOVE, OWNED IN THE PRINCIPAL MARITIME COUNTRIES OF THE WORLD.

Country.	Gross Tonnage.	
	June, 1925.	June, 1926.
Great Britain and Ireland	1,708,978	1,836,059
British Dominions	185,836	205,212
British Empire	1,894,814	2,041,271
United States	2,281,324	2,319,314
Belgium	34,982	43,307
Denmark	9,647	12,660
France	151,089	142,551
Germany	55,754	66,690
Holland	148,109	163,667
Italy	128,904	166,298
Japan	47,137	48,628
Norway	243,455	343,582
Spain	30,648	30,585
Sweden	4,873	16,270
Other countries	146,894	203,375
Total	5,177,630	5,598,198

this huge quantity has called into being a new arm of the world's merchant service. In 1914 only some 1½ million tons of oil-tank steamers were in existence, whereas it will be seen from Table III. that in 1925 this total had increased to over 5 million gross tons, while nearly half a million tons has since been added.

It will be observed that the share of the British Empire in the oil-carrying trade of the world is very little short of that of the United



UNION CASTLE PASSENGER MOTOR LINER CARNARVON CASTLE.
(Built and engined by Harland & Wolff, Ltd., Belfast.)

[*See page* 187.

States, and that the British Empire and the United States together account for nearly four-fifths of the total for the world.

It should not be forgotten that the figures shown in Table III. do not represent the whole of the world's oil fleet, since there are between 50,000 and 100,000 gross tons of oil-carrying vessels which are under 1,000 tons gross.

Laid-up Tonnage.

Unfortunately, however, the remainder of the increase to the world's merchant fleet is indicative of misplaced national ambitions rather than any expansion in world trade. No clearer evidence of this could be furnished than the fact that ever since the unnatural trade boom following the war a very large amount of merchant tonnage has been idle. Much of this laid-up tonnage consists of uneconomic types of vessels which will never again find their way into service, and during the past two years the policy of scrapping such vessels has been adopted on a fairly large scale, with the consequence that the total is now becoming appreciably smaller. It will be seen from Table IV., however, that some 5½ million tons was still laid up at the beginning of this year. To this total the United States Shipping Board alone contributed over 3¼ million tons—a decrease of only a million tons from the Shipping Board figure for January 1922, the total amount laid up in the United States being over 4 million tons. Apart from the huge total in the United States, which seems to baffle every effort at reduction, there has been a steady decline over the past 5 years in the amount of tonnage laid-up, and in the majority of the maritime countries the laying-up of tonnage is a far less serious factor than in the past. The increase since January 1926 is almost entirely consequent upon the prolonged coal strike in this country, and is mainly confined to European and Empire waters.

Table IV.—Tonnage laid up in the Principal Maritime Countries of the World.

(Thousands of gross tons, *i.e.* 000's omitted.)

Country.	January, 1922.	January, 1923.	January, 1924.	January, 1925.	January, 1926.	June, 1926.
Great Britain and Ireland	1,769	1,010	909	705	613	1,273
Australia	50	107	85	166	51	125
United States	5,309	5,328	4,271	4,223	4,120	3,757
France	1,085	730	450	311	134	92
Holland	327	330	235	65	109	64
Japan	120	99	29	25	35	25
Italy	585	472	427	225 *	225	251
Scandinavia	572	92	63	45	115	177
Greece	170	76	122	24	99	67
Belgium	275	170	86	26	21	28
Spain	530	520	128	60	44	73
Idle in other countries †	192	195	83	103	279	154
Total	10,984	9,129	6,888	5,978	5,845	6,086

* Estimated. † Mainly belonging to the countries given.

Employment of Tonnage.

It is obvious that no comparison of the fleet in existence to-day with that existing immediately prior to the war is of value unless these two factors are allowed for. It may be assumed that the majority of the tonnage existing in 1914 was usefully employed. The operation of the ordinary laws of supply and demand was sufficient to prevent the accumulation of any large surplus of tonnage. If, then, the increase in the tanker fleet be deducted from the present world total of merchant shipping, and the amount of tonnage laid-up also be deducted, it is possible to obtain a figure for the ordinary merchant tonnage at present usefully employed which will be roughly comparable with the 1914 figure. This calculation is made in Table V. :—

Table V.—Estimated Approximate Amount of ordinary Seagoing Steam and Motor Tonnage employed by the various Maritime Countries in 1926.

(Thousands of gross tons, *i.e.* 000's omitted.)

Country.	Gross tonnage owned, June, 1926.	Oil tanker tonnage owned, June, 1926.*	Tonnage laid up, January, 1926.	Estimated gross tons employed, to compare with the tonnage owned in 1914.	Tonnage employed, 1926, as percentage of tonnage owned in 1914.
Great Britain & Ireland	19,237	1,836	613	16,788	88·9
British Dominions . .	2,325	205	51†	2,069	147·1
British Empire. . .	21,562	2,041	664	18,857	92·5
United States . . .	11,111	2,319	4,120	4,672	254·3
France	3,303	143	134	3,026	157·8
Germany	3,049	67	—	2,982	58·5
Holland.	2,552	164	109	2,279	154·9
Italy	3,125	166	225	2,734	191·5
Japan	3,806	49	35	3,722	226·7
Scandinavia . . .	5,044	373	115	4,556	123·7
Spain	1,103	31	44	1,028	116·4
Other countries . .	3,544	203	399	2,942	68·9
Totals . . .	58,199	5,556	5,845	46,798	110·1

It will be seen that whereas the tonnage owned in the United States is to-day over 600 per cent. greater than in 1914, the comparable tonnage actually in employment is only some 2½ times the pre-war figure.

The tonnage in employment in this country is some 10 per cent. less than in pre-war days, which is probably a fairly correct indication of the relative trade of the country.

The remaining countries of the world show a considerable increase in employed tonnage, and since world trade has decreased in volume since pre-war days, it is to be inferred that the world's tonnage is not so well employed as it was in 1914 ; in other words the efficiency of the fleet has been reduced.

* Excluding vessels under 1,000 tons gross.
† Australia only.

The Age of Tonnage.

The acute depression of the last 6 years has been responsible for a number of ships being retained in service long past their usual economic life, the owners not being able to maintain their usual rate of obsolescence. This is one of the main factors which have diminished the efficiency of the fleet as compared with pre-war days. A reference to Table VI. will show that while the tonnage between 20 and 25 years of age owned in the world has been maintained at a fairly constant percentage over the past 5 years, there has been a persistent and disquieting increase in the percentage of the world's fleet which is over 25 years of age. In this respect the United Kingdom and the British Dominions are in a distinctly better position than other countries, while Italy, Japan, Spain, and Denmark are responsible for the majority of the increase.

Table VI.—Percentage of the Total Seagoing Steam and Motor Tonnage owned in the Principal Maritime Countries which was over 20 and 25 Years old in June of the Years shown.

Country.	20 years and under 25.					25 years and over.				
	1922.	1923.	1924.	1925.	1926.	1922.	1923.	1924.	1925.	1926.
Gt.Brit.& Ireland	11·2	11·1	10·2	9·7	10·4	8·0	8·2	8·5	8·5	8·7
Dominions . .	10·3	12·9	11·7	12·1	11·2	19·0	18·7	20·3	17·7	16·3
United States *	4·3	4·4	4·4	3·7	3·9	4·3	4·6	4·7	4·6	5·4
Denmark . .	11·0	11·9	12·1	13·3	12·2	15·1	15·2	14·7	15·2	17·2
France . . .	8·9	8·8	9·2	10·2	10·7	12·7	12·7	11·3	11·1	10·8
Germany . .	12·7	10·0	9·9	8·2	9·3	13·6	12·9	15·2	14·9	13·7
Holland . .	7·6	8·2	6·0	5·8	6·7	3·2	3·1	3·4	3·2	3·5
Italy . . .	14·6	14·7	13·4	13·6	12·5	17·6	18·0	18·6	21·4	24·3
Japan . . .	8·1	8·1	9·5	9·5	9·1	18·2	18·3	18·6	19·8	21·3
Norway . . .	7·3	7·8	8·1	9·9	9·6	10·7	11·6	11·6	11·8	11·7
Spain . . .	10·5	9·3	8·0	6·4	5·6	41·3	42·9	43·3	45·3	44·6
Sweden . . .	9·3	9·3	9·1	7·1	8·2	26·5	28·2	29·9	31·4	31·6
Total world fleet*	9·3	9·5	9·1	9·1	9·4	11·6	11·9	12·6	13·1	13·9

Methods of Propulsion.

Against the decrease in efficiency due to the rise in the average age of the fleet, there must be placed the increase in efficiency arising from the great expansion in motorship tonnage and in the tonnage of vessels burning oil fuel. It will be seen from Table VII. that whereas in 1914 nearly 90 per cent. of the world's tonnage was propelled by coal, by 1926 the fleet using this form of prime mover was less than two-thirds of the total; on the other hand, nearly 30 per cent. of the fleet now burns oil fuel under boilers, while there is already over 5 per cent. of the world's tonnage fitted with internal combustion engines. The introduction of the Diesel engine has been rapid, and while the demands for oil for land purposes limit the price at which oil is available for marine purposes, and consequently impose a limit to the proportion of the fleet which can

* Excluding American Great Lakes vessels.

economically depend on Diesel engines for its motive power, there is no doubt that the present rate of development will be maintained for some time to come.

TABLE VII.—PERCENTAGES OF THE WORLD'S TOTAL FLEET OF MERCHANT VESSELS USING THE VARIOUS FORMS OF MOTIVE POWER.

NOTE.—The percentages given are of the total gross tonnage owned in the world; sailing vessels with auxiliary power are included under the appropriate section for their engines, and the section for vessels using oil fuel under boilers includes all vessels capable of being so employed—a number of such vessels are capable of utilising either oil or coal, and may be using either.

Motive power.	1914.	1922.	1923.	1924.	1925.	1926.
Sail power only	8·06	4·70	4·34	3·92	3·50	3·26
Internal combustion engines	0·45	2·35	2·56	3·09	4·20	5·39
Oil fuel under boilers . .	2·65	22·34	24·23	26·79	27·54	28·16
Coal . . .	88·84	70·61	68·87	66·20	64·76	63·19
	100·00	100·00	100·00	100·00	100·00	100·00

SHIPBUILDING AND SHIPBREAKING.

In last year's "Annual" the writer commented on the fact that since the world requires the most efficient and economical means of transport there will always be a demand for new ships, no matter how many old ships are in existence. There is every reason to believe that the world output of new ships will be something of the order of 1½ to 2½ million tons for some years to come, and since the annual merchant ship losses appear to be fairly stable and in the neighbourhood of half a million gross tons per annum, it follows that unless an unprecedented expansion in world trade takes place—which is unlikely—there will be an annual surplus of between 1 and 2 million gross tons, unless shipowners generally face a programme of shipbreaking on a scale far in advance of anything that has yet been done in that direction. In this connection the figures contained in Table VIII. are significant.

Towards the close of last year there appeared to be grounds for believing that the problem of shipbreaking was really receiving energetic consideration. Unfortunately, however, the figures for 1925 show a considerable reduction from the previous year's total, and it would appear that the full seriousness of this phase of the position has not yet been realized. The world has increased its fleet during the last 13 years by no less than 20 million tons; some 5 million tons of this is legitimately due to the increasing needs of the oil industry, but even if world trade were equal in volume to the pre-war amount there would still be a surplus of some 10 to 15 million tons to be dealt with, before the world's merchant fleet could really be said to equal its pre-war efficiency.

In these circumstances it is inevitable that shipbuilding should be limited to essential replacements and special types of vessel, and

TABLE VIII.—GROSS TONNAGE OF MERCHANT VESSELS LOST, BROKEN UP, AND LAUNCHED IN THE WORLD FOR THE YEARS 1913 TO 1924 INCLUSIVE.*

Year.	Tonnage lost.†	Tonnage broken up.	Total deductions.	Tonnage launched.	Net increases or decreases to world's fleet.
1913	445,265	87,737	533,022	3,332,882	+ 2,799,880
1914	773,934	96,728	870,662	2,852,753 ‡	+ 1,982,091
1915	1,867,386	26,332	1,893,718	1,201,638 ‡	— 692,080
1916	2,714,982	9,059	2,724,041	1,688,080 ‡	— 1,035,961
1917	6,602,478	4,783	6,607,261	2,937,786 ‡	— 3,669,475
1918	3,330,354	2,437	3,332,791	5,447,444 ‡	+ 2,114,653
1919	514,234	9,938	524,172	7,144,549 ‡	+ 6,620,377
1920	510,794	7,801	518,595	5,861,666 ‡	+ 5,343,071
1921	458,756	77,545	536,537	4,341,679	+ 3,805,142
1922	428,756	315,110	743,866	2,467,084	+ 1,723,218
1923	494,364	962,506	1,456,870	1,643,181	+ 186,311
1924	440,404	1,174,258	1,614,662	2,247,751	+ 633,089
1925	327,748	746,560	1,074,308	2,129,536	+ 1,055,228
Totals .	18,909,691	3,520,794	22,430,485	43,296,029	+20,915,544

* Excluding American Great Lake vessels.
† Including war losses.
‡ No returns from Germany for these years.

that competition within the industry should be far more severe than in the past. It will be of interest therefore to examine the output of the shipbuilding industry and to see what changes have been effected therein. Table IX. gives a summary of the world merchant shipbuilding output over the past few years, and Table X. gives the output of the principal countries, expressed in terms of the 1913 output and of the total world output.

TABLE IX.—THE WORLD'S SHIPBUILDING OUTPUT.

(Thousands of gross tons.)

Country.	1913.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
United Kingdom .	1,932	1,620	2,056	1,538	1,031	646	1,440	1,085
British Dominions §	27	298	174	118	53	37	30	32
British Empire . .	1,959	1,918	2,230	1,656	1,084	683	1,470	1,117
Germany ‖ . . .	465	†	†	509	575	358	194	418
United States ¶ . .	228	3,040	2,349	995	97	96	90	79
France	176	33	93	211	185	97	80	76
Holland	104	137	183	232	163	66	64	79
Japan	64	612	457	227	83	72	73	56
Austria-Hungary .	62	—	—	—	—	—	—	—
Italy **	50	83	133	165	101	67	82	142
Scandinavia . . .	110	147	164	195	103	112	120	154
Other countries . .	43	79	96	129	43	12	10	8
World's total . .	3,261	6,049††	5,705 ††	4,319	2,434	1,563	2,183	2,129

§ Excludes Canadian Great Lake vessels.
‖ Including Danzig.
¶ Excluding Great Lake vessels.
** Now includes Trieste.
†† Excluding Germany

The world's shipbuilding output for 1925 was very little less than that of 1924, in spite of the difficulties attendant on the trade depression which has been so long continued. While still less than in pre-war days, the output of the United Kingdom for 1925 represented half the total shipbuilding of the world, and there is some ground for hope for the future of our national industry in that the expansion of foreign shipbuilding seems to be definitely checked. The exceptions to this statement are the cases of Italy, with its elaborate system of subsidies to which reference will be made later, and the Scandinavian countries, which have benefited by the introduction of the motorship. British Dominions have also increased their output to a small extent.

The world output, however, is still only some two-thirds of the pre-war total. Admittedly, the shipbuilding industry was "enjoying" (?) a boom period immediately prior to the war; but until the disparity in output is considerably less than as indicated above it is

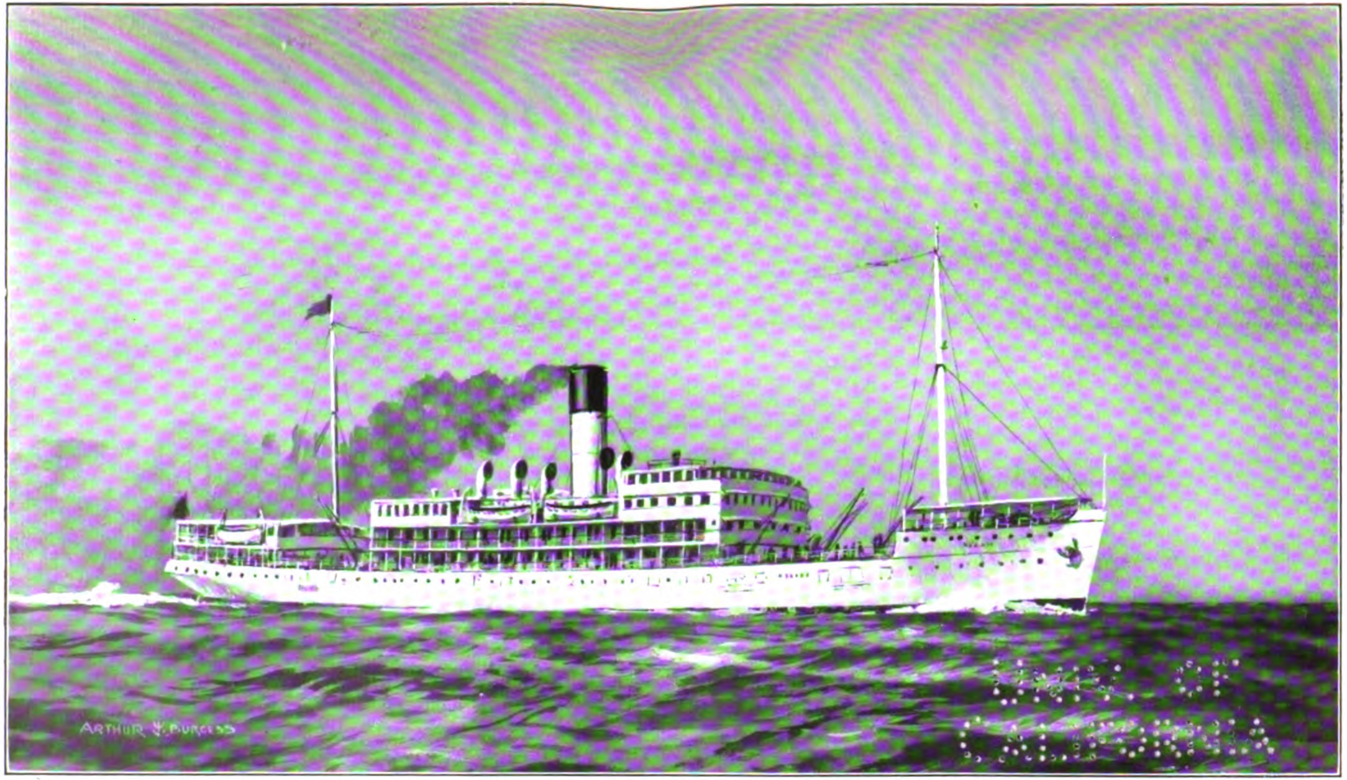
TABLE X.—PERCENTAGE OF WORLD'S TOTAL AMOUNT OF TONNAGE BUILT IN THE PRINCIPAL SHIPBUILDING COUNTRIES, AND PERCENTAGE WHICH EACH COUNTRY'S OUTPUT IS OF THAT OF 1913

Country.	Percentage of world total.					Percentage of 1913 total.				
	1913.	1919.	1921.	1923.	1925.	1913.	1919.	1921.	1923.	1925.
Great Britain and Ireland	59·2	26·8	35·7	41·4	50·9	100·0	83·8	79·6	33·4	56·1
British Dominions	0·8	4·9	2·7	2·3	1·5	100·0	1103·7	435·4	137·0	118·6
British Empire	60·0	31·7	38·4	43·7	52·4	100·0	97·9	84·5	34·9	57·0
Germany	14·3	—	11·8	23·0	19·6	100·0	—	109·4	77·0	90·0
United States	7·0	50·3	23·0	6·2	3·7	100·0	1333·3	436·6	42·1	34·7
France	5·4	0·5	4·9	6·2	3·6	100·0	18·8	119·8	55·1	43·2
Holland	3·2	2·3	5·4	4·2	3·7	100·0	131·8	223·0	63·5	76·0
Japan	2·0	10·1	5·2	4·6	2·6	100·0	956·0	354·6	112·6	87·5
Austria-Hungary	1·9	—	—	—	—	100·0	—	—	—	—
Italy	1·5	1·4	3·8	4·2	6·7	100·0	166·0	330·0	134·0	284·0
Scandinavia	3·4	2·4	4·5	7·1	7·3	100·0	133·6	177·3	101·9	140·0
Other countries	1·3	1·3	3·0	0·8	0·4	100·0	183·8	299·9	27·9	18·6
World's total	100·0	100·0	100·0	100·0	100·0	100·0	185·6	132·5	48·0	65·8

obvious that competition within the industry will be severe, and that conditions in the countries which mainly contribute to the world's shipbuilding output will continue to be difficult.

Evidence of this is furnished by Table XI., which shows the shipbuilding position in more detail as regards the United Kingdom and other countries.

Stability in the shipbuilding industry can only be maintained so long as there is a fairly good balance between the amount of tonnage under construction at the moment and the amount of tonnage which on the one hand is coming forward for construction and on the other hand is leaving the ways; indeed, output alone is no guide at all to conditions in the industry in the immediate future—a country may be able to show a large output of ships while still being in a most unsatisfactory state owing to the lack of further orders to fill the berths which are being vacated. From this point of view there is very little comfort to be obtained from a study of the



(*From a drawing by Arthur J. W. Burgess.*)

STRAITS STEAMSHIP COMPANY'S TURBINE PASSENGER VESSEL KEDAH.

(*Building by Vickers Ltd., under the supervision of Alfred Holt & Co.*)

[*See page* 184.

TABLE XI.—SHIPBUILDING AT HOME AND ABROAD.

(Thousands of gross tons.)

Quarter ending	United Kingdom.			Other countries.			World total.		
	Under construction.	Commenced	Launched	Under construction.	Commenced	Launched	Under construction.	Commenced	Launched
Sept., 1919 *	2,817	—	416	5,232	—	1,371	8,049	—	1,787
Sept., 1920 *	3,731	594	483	3,834	788	1,005	7,565	1,382	1,488
Sept., 1921 *	3,283	51	308	2,260	265	539	5,543	316	847
Sept., 1922 .	1,617	82	307	1,456	106*	1,186	3,073	188*	1,493
Sept., 1923 .	1,271	112	66	1,067	100*	288	2,338	212*	354
Sept., 1924 .	1,468	253	360	1,113	278	192	2,581	531	552
Mar., 1925 .	1,165	202	339	1,231	193	267	2,396	395	606
June, 1925 .	1,094	190	298	1,276	232	295	2,370	422	593
Sept., 1925 .	1,009	261	225	1,198	244	250	2,207	505	476
Dec., 1925 .	885	161	216	1,185	182	275	2,070	343	491
Mar., 1926 .	843	193	191	1,167	194	270	2,010	387	461
June, 1926 .	841	168	172	1,129	163	204	1,971	332	376

relative movements of tonnage commenced, under construction, and launched, over recent quarters. The tonnage launched shows a persistent decline both in this and other countries; the tonnage under construction shows a similar decrease; while the tonnage commenced, which is the most sensitive index to future movements, and which showed signs of a distinct revival about the middle of last year, now shows a steady and disquieting decline. To a certain extent, particularly in this country, this decline is artificial, and due to the cumulative effect of recent labour troubles, but there is no doubt that the world's demand for ships is permanently smaller than it was immediately prior to the war, and that there is no real prospect of a diminution of the difficulties of the shipbuilding industry for some time to come.

GREAT BRITAIN.

Turning, then, to a consideration of the conditions obtaining in the principal shipbuilding and shipping countries, the past year has been no less difficult for British Shipping and Shipbuilding than its immediate predecessors. This is the more unfortunate because it is due to conditions which are largely outside the control of the industry itself. The co-operation between masters and men within the industry has probably never been better than during the period under review, and it is regrettable therefore that the period has been marked by dissensions in other branches of industry which have had a very serious effect on shipping and shipbuilding—as indeed they have had upon the whole life of the community.

The General Strike, although admittedly affording grounds for optimism on the score of the national temper, involved the country in direct national expenditure to quite a serious extent—for instance,

* Excluding Germany and Danzig, returns for which were not available.

the supplementary estimate for the Civil Services amounted to nearly $3\frac{1}{2}$ million pounds. But the indirect effects in the way of lost trade opportunities were little short of alarming. Add to this the fact that the coal strike is still continuing—in July last it was estimated that the cost involved in the coal stoppage was roughly 150 millions—and it is difficult to see any hope of an early recovery in trade and consequently in shipbuilding and shipping.

It is surely significant at this moment, which is so crucial in the history of our national prospects, and yet is marked by such serious internal differences, that the two industries upon which our national existence ultimately depends (shipping and shipbuilding) appear to be on the verge of outgrowing the dissensions from which they have suffered for so long. The shipping industry has shown in a most marked manner that it is possible for masters and men to meet on grounds of common interest and to study together the problems and difficulties which have to be faced. The shipbuilding industry has found it possible to appoint a joint Committee of Employers and Unions which has considered conditions in the shipbuilding industry from the point of view both of those costs which are within the control of the industry and those which are outside its control. This inquiry has been conducted with a view to ascertaining what steps are necessary in order that the industry may successfully meet the foreign competition which since the war has been so severe a factor in the depression.

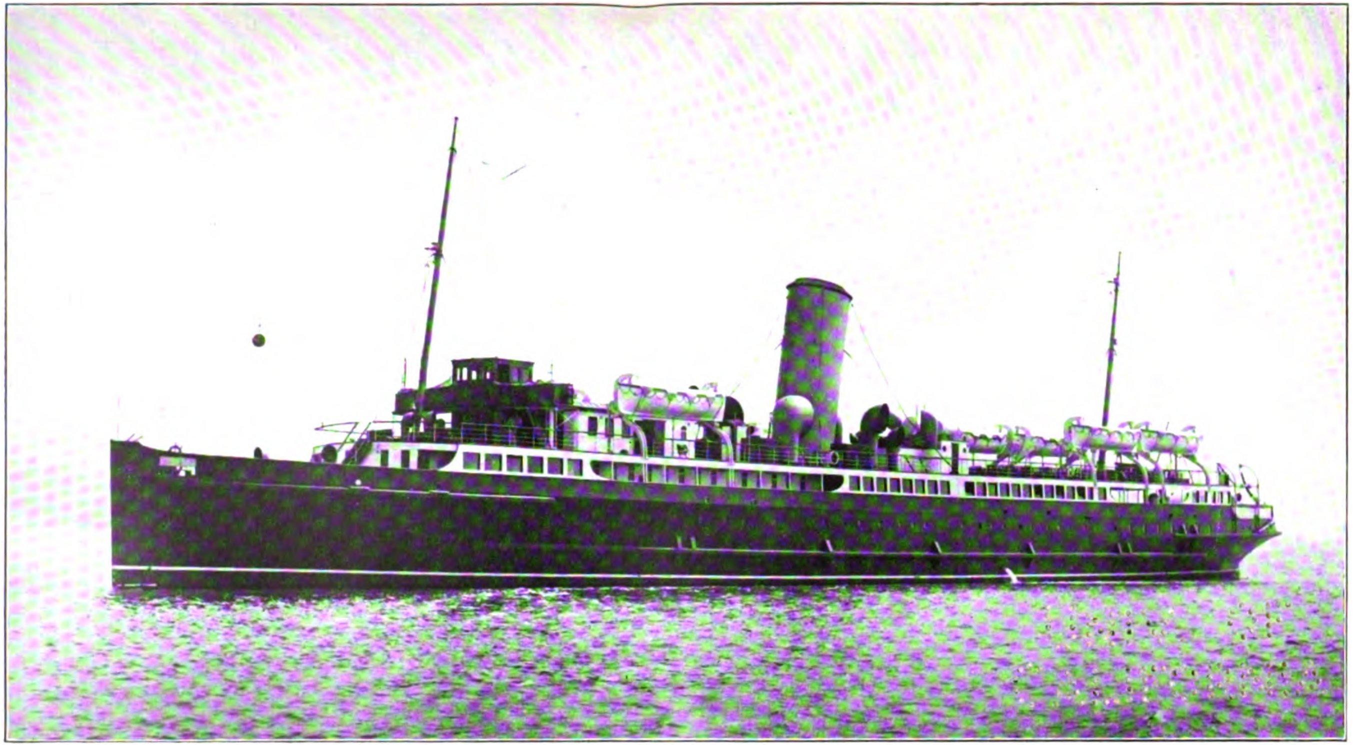
The Shipbuilding Inquiry.

The Report of this Committee is so valuable, both by reason of the matter actually contained in it and for the fact that it is a milestone in the history of the relations between employers and employed, that no excuse is needed for referring to it here in some detail.

In considering the question of foreign competition the first question which arose was one to which reference was made in last year's "Annual" when dealing with the same matter. There is an international agreement for an 8-hour day, but it was stated in the Report that both in Germany and Holland shipyards are working 54 hours per week, and while there is no desire to increase the hours of the regular working week in British shipyards it is obvious that unless this agreement is honourably observed in other countries it will be difficult to avoid an "international competitive race in hours of work" which "would seriously jeopardize the general standard of working life."

The Report also dealt with the question of "demarcation," which has long been a serious trouble in British yards. There is no need to retail here some of the absurd examples which can be found of work being held up owing to a dispute as to which trade should carry out some trivial piece of work that either trade was capable of doing. The Report seeks to obviate this unfortunate state of affairs by proposing an agreement on the subject of interchangeability and substitution of various classes of work.

In parenthesis it may be mentioned that it would be laughable,



LIVERPOOL AND NORTH WALES STEAMSHIP COMPANY'S TURBINE STEAMER ST. TUDNO.

(Built and engined by the Fairfield Shipbuilding & Engineering Co., Ltd.)

[*See page* 188.

were it not so deplorable, that it is necessary to come to a solemn agreement, for instance, that an electrician engaged in wiring a ship may be allowed also to fit wooden blocks to take the necessary switches.

Full consideration was given by the Committee to the particular cases of the motor ships contracted for by Messrs. Furness, Withy & Co. in Germany, which readers of the "Annual" will remember aroused considerable public attention by reason of the fact that the accepted German price was some £60,000 per ship *less* than the lowest British tender, even though the latter made no allowance whatever for overhead charges such as rates and taxes, management, administration, salaries, and directors' fees, nor for any return on capital. It was, however, agreed that the case of this contract "was quite abnormal and did not represent accurately the general run of the margin between British and foreign tenders."

The Report goes on to say that:

". . . In many contracts for new work, particularly for the bigger ships which gave the greatest amount of employment, and in the majority of contracts for repair work—in which the Continental competition, particularly of the Rotterdam firms, was most keenly felt—the margin of difference was not so great. In these cases by minor readjustment in handling and greater elasticity in the organization of work, by interchangeability and by the loyal and full observance of the conditions of the 47 hours' week, much of the new work and the greater portion of the ship-repairing work which at present goes to the Continent could be retained for the British workmen and the British shipbuilders. This would also, the shipbuilders hoped, encourage shipowners to place work at the reduced prices which would thus be secured without interfering with the wages or increasing the working hours of the shipyard workmen."

The second part of the Report deals with the conditions which are outside the control of the industry, and the conclusions arrived at may be summarized as follows:

(1) *Materials and Equipment.*—Examination shows that while some materials are obtainable at keen prices, many materials have to be purchased at prices which are unreasonably high as compared with pre-war prices and also as compared with the general level of prices. These unreasonable figures are alleged to be due to the operation of rings and price-fixing associations, or to arrangements between manufacturers and merchants which preclude shipbuilders from purchasing direct, even though their requirements are of a wholesale character.

(2) *Local Rates and Taxation.*—It is stated that rates and taxes are generally some three times what they were in pre-war days, due to redundant yard extensions still being taken into account for rating purposes and to pre-war properties and machinery being revalued on a higher basis. Serious as this is, it is rendered worse by the fact that owing to the decrease in output the incidence of this taxation *per ship* is very much heavier.

Reference is also made to the fact that as poor-law districts are responsible for the relief of distress arising within their own borders, a vicious circle is in operation; in shipbuilding areas unemployment is high, poor law rates are consequently high, this increases the price of ships, resulting in a decrease in orders and an increase in unemployment which again raises the poor-law rate.

The local authorities are also in some cases utilizing a portion of the rates for the redemption of capital expenditure; the Report urges the suspension for a period of rates levied to provide for sinking funds.

(3) *Social Services.*—A statement taken from the Report is given below which compares the costs arising by reason of national insurance schemes in pre-war days and to-day. This statement will be sufficient to show the serious nature of the increased costs arising from this factor:

NATIONAL INSURANCE SCHEMES.

(For unemployment, health, and pensions.)

Item.	Contribution.		
	Paid by	1913.	1926.*
1. Contribution per week per man employed	Employer Workman State	5½*d.* 6½*d.* 4⅛*d.*	1*s.* 5*d.* 1*s.* 4*d.* 9½*d.*
2. Annual cost (50 weeks per year) at establishment employing 1,000 men	Employer Workman State	£1,146 £1,354 £868	£3,542 £3,333 £1,979

(4) *Cost of Living.*—The Report urges the necessity for a substantial reduction in the items which determine the cost of living. Certain industries which do not have to face direct foreign competition still have wage rates which are quite disproportionately high. These wages react upon the general cost of living in the country and so tend still further to increase the disparity between conditions in such trades and in those industries which have to face international competition.

(5) *Public Services.*—The Report considers that in many instances the increases in charges for piloting, towage, harbour dues, public drydock dues, and so forth are unreasonably high. This is particularly true of railway transport, which enters to a very serious extent into the cost of shipbuilding both directly and cumulatively.

At the time of writing, this Report has not yet received the formal approval of all the trade unions concerned. It is hoped that this will not be long delayed, since the acceptance of the Report would argue a degree of agreement between the parties which could not but react favourably upon the general shipbuilding condition in this country.

Before leaving the question of the Report it is interesting to observe the courageous independence of the statement contained in the Report that the Committee could not bring themselves to the view that either the ultimate condition of the industry or the country's best interests could be helped by the Government being

* The 1926 figures only represent the increased cost arising from increased contributions. To that has to be added the further increases due to extension of the *personnel* brought under the Acts.

asked to grant temporary assistance by subsidy or direct monetary aid. This is a statement which is worthy of attention both by other industries in this country and by those countries—notably Italy and Japan—where shipbuilding subsidy is a political doctrine which is so widely accepted.

United States.

As far back as 1912 the American Congress declared it to be necessary, both for national defence and for the sake of foreign and domestic commerce, that the United States should possess an efficient merchant fleet capable of carrying the greater portion of its own commerce. But for the war it is probable that this statement would have continued to be merely a political tenet which had no practical bearing upon the world's commerce. The effect of the war was to provide opportunity for a political ideal to be translated into the sphere of practical affairs.

Result ?—The years since the war have shown that no matter how strong is the national ambition for a particular object, that object cannot be attained if it runs counter to economic law. The history of the American merchant marine is one of epic creation in response to the old world's frenzied demand; of premature jubilation in the satisfaction of a national ideal; and of reluctant awakening to the disillusionment of a privately-owned fleet crippled by its State competitor, an annual national deficit of between 20 and 30 million dollars on its State shipping venture, and a fleet of well over 4 million gross tons lying rotting at its anchors without the slightest prospect of finding useful employment.

Unfortunately, the problem is complicated by three outstanding factors which combine to prevent America from cutting the Gordian knot which would free both the States and the rest of the world from the incubus which frustrates any attempt to return to more normal conditions in the shipping industry. In the first place the United States are naturally reluctant to write off the whole of their State-created fleet as a dead loss and to surrender their ideal of an American commerce carried in "100 per cent. American" ships. In the second place, America is by far the richest country in the world at the moment, and so an expenditure which would normally arouse the keenest opposition meets only with a lukewarm resistance from the farming element in the Middle West. Finally, although it is perhaps rather unkind to make the comparison, the American Congress is more reminiscent of the Council of the League of Nations than of any other legislative body that the world has ever seen. As a modern English novelist has phrased it, it is impossible to find unanimity:

"... in New England, purest in Saxon blood and tradition, sensitive to every European repercussion and receptive of every thought-wave borne across the Atlantic; in the Southern States, with their political concentration on the negro within their gates and the Mexican without; in the North-West, watchful of Canadian encroachments; in the Far West, with its eyes set on a Japanese peril; in the Middle West, where the farmer of Illinois and Iowa lives and dies without coming nearer than at a thousand miles distant to Pacific or Atlantic; in scattered, unassimilated lumps...."

It is small wonder therefore that the United States finds it difficult to agree upon a definite national policy in respect of this huge surplus fleet which it still has on its hands. Towards the middle of last year, the United States Government formulated the somewhat paradoxical policy that the United States Shipping Board vessels should be sold to private owners, but that the Government should retain control over their management up to a certain point.

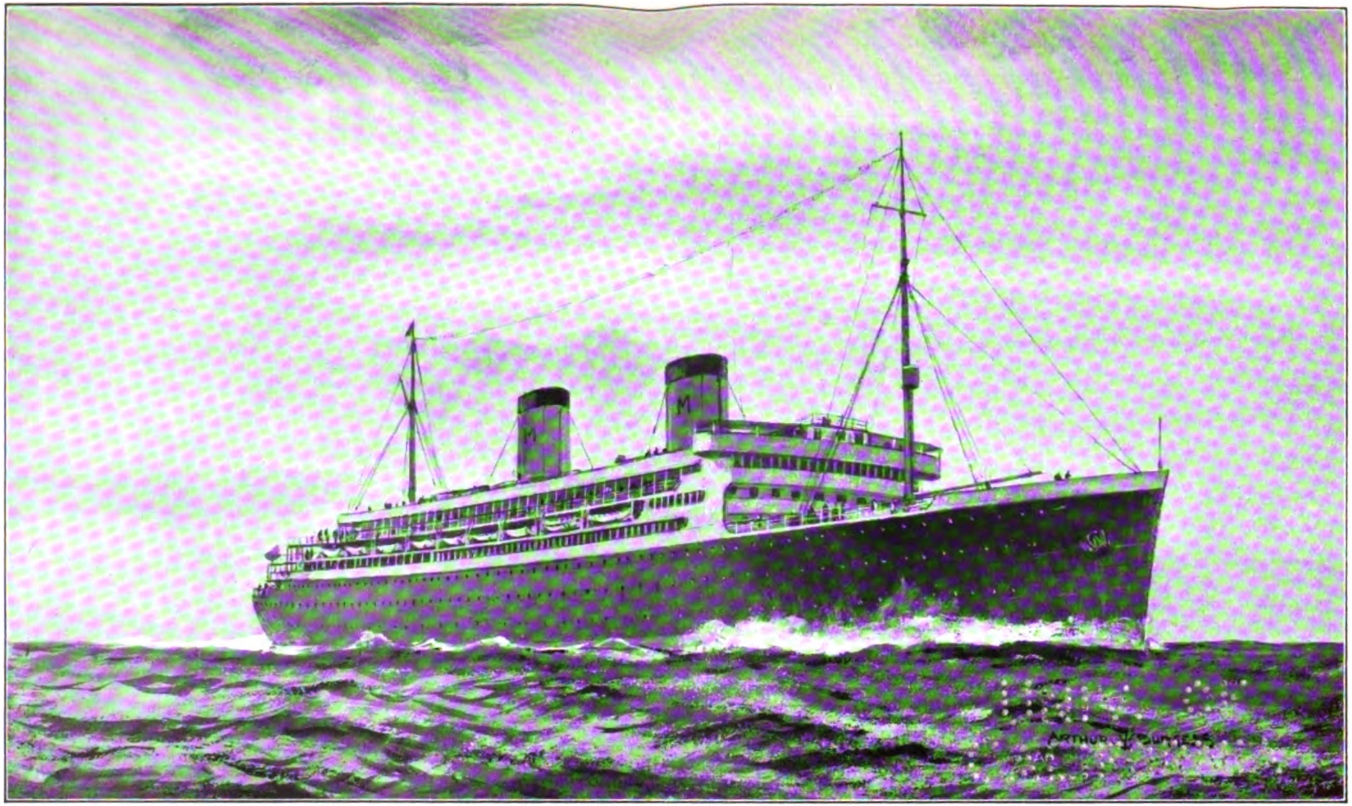
A much more practical step was taken last August, when Mr. Henry Ford was induced to purchase a certain number of the laid-up vessels of the United States Shipping Board under an agreement to scrap the ships within the continental limits of the United States within eighteen months of the delivery of the vessels, reserving the right to use any of the machinery from the ships in his factories, and also reserving the right to fit certain of the ships with Diesel engines for the use of his companies. This purchase concerned some 200 ships, and no doubt the coming year will see the disappearance of a large amount of ineffective tonnage from America's fleet on this account.

That such a reduction is highly desirable is evidenced by the fact that the United States Shipping Board report for last year shows a loss of some 30,000,000 dollars, which had to be met by grants from the Treasury. While this marks a great advance on the previous year's figure, which was no less than 41,000,000 dollars, the report stated quite openly that "government aid alone, either through preferential tariff duties, preferential tonnage dues, or subsidies, more or less direct, can secure the operation and continued existence of an adequate number of American merchant ships under private ownership."

It is significant that according to a return furnished to the Senate, there was a loss during 1925 of no less than £355,800 on the 6 ships of the United States Lines. This is an annual loss of nearly £60,000 per vessel, or over £5,300 per voyage. The Leviathan alone was responsible for a loss of 588,389 dollars on 15 voyages. Moreover, these figures are quite exclusive of interest, insurance, depreciation, and other overhead charges.

In spite of this, and of a reserved coastal trade and an enormous export trade, the report states that "freight ships are the craft that particularly need assistance." It will thus be seen that the continued existence of a large American fleet is highly artificial, and it is to be hoped that America will have the wisdom and the courage to realize this at an early date.

At the moment, however, the only policy which seems to find any acceptance in America is one of using the vessels somehow, and the latest development has been a grant of 25 million dollars by which it is hoped to take advantage of the present development of the motorship by the "Dieselization" (typical Americanism!) of a number of the laid-up ships. Fourteen cargo vessels have already been selected for conversion, and the first of these is expected to be ready for service early in October.



(From a drawing by Arthur J. W. Burgess.)

MATSON PASSENGER LINER MALOLO.

(Building by the William Cramp & Sons Ship and Engine Building Co., Philadelphia. The Malolo is the largest merchant vessel ordered from an American Shipyard.)

[*See page* 189.

American Loadlines.

The United States is one of the few maritime countries which does not assign a loadline to its ships, and the past year is notable by reason of the fact that once again the United States Government is taking up this matter; a Bill is now before Congress which has for its object the establishment of a compulsory loadline for American ships. The Bill received the attention of the last session of Congress, but like its forerunner met with considerable opposition. The ship-owning interests opposed the Bill on the grounds that the ships of other maritime countries violated their own loadline laws, and in particular that oil-tank vessels were able to load some 10 to 15 per cent. deeper than corresponding cargo vessels. At the other end of the scale the Bill met with opposition from the labour interests in Congress purely as a political move to prevent any consolidation of the Steamboat Inspection Bureau with the Navigation Bureau until after a settlement of the proposed transfer from the Department of Commerce to the Department of Labour of the duties relating to persons employed in seafaring occupations, now undertaken by the Steamboat Inspection Bureau.

In spite of this opposition there seems a possibility that the Bill may become law before the end of 1926. Its requirements, apart from the reorganization of the functions of the Department of Commerce relating to navigation, are summarized below:

(1) Loadlines are to be established for cargo-carrying vessels of 500 tons gross and above loading at a United States port, and for similar United States-owned vessels loading at foreign ports.

(2) Such loadlines are to be established by regulations to be issued by the Department of Commerce defining, "in general accordance with the practice of the principal maritime nations," the maximum depth to which such vessels may safely be loaded, and it is to be an unlawful act to load deeper than as allowed by the Regulations.

(3) It is to be the duty of the owner and of the master of the vessel to cause the loadline to be marked.

(4) American corporations for the survey or registry of shipping are to be appointed to assign loadline, but *at the request of the shipowner,* approved foreign Classification Societies may undertake the work.

(5) Loadline Certificates of foreign countries are to be accepted provided the regulations are generally equal to those now proposed and provided also that the country concerned furnishes a reciprocal agreement.

Germany.

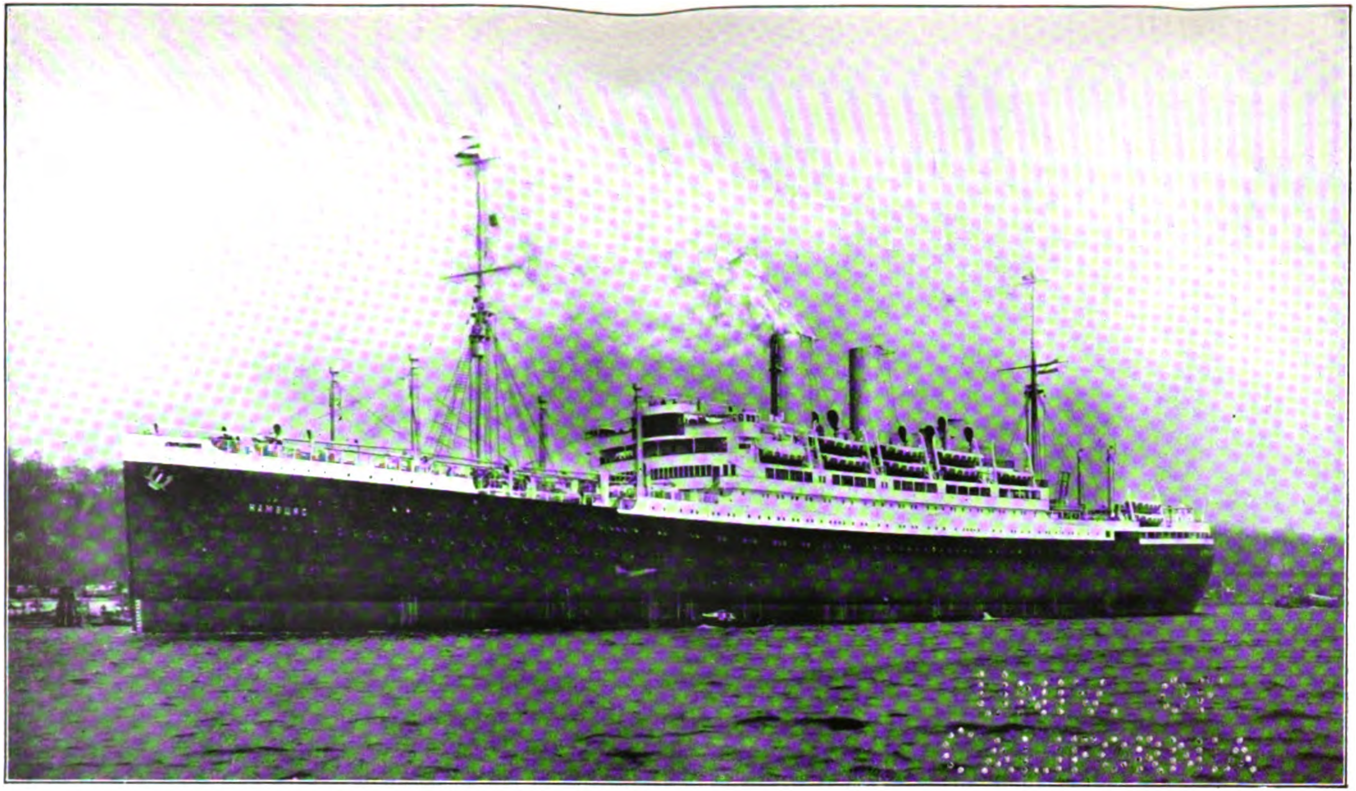
At the time of the public outcry in connection with the Furness Withy contract, to which reference has already been made in this article, much alarm was expressed in regard to German competition in the shipbuilding industry. Some critics even went to the length of prophesying, apparently as a plagiarism of the Norman Angell aphorism that the nation which loses a war wins it, that Germany would take Great Britain's place as the foremost shipbuilding country of the world. Many of the statements made at the time appeared even then to be due to post-war hysteria, and it is doubtful whether any one outside the prophets themselves really believed the gloomy forecast. To-day, few prophets could be found who would venture on such a statement. German shipowners, having recovered

some 60 per cent. of their pre-war fleet, are wisely content to await a definite increase in world trade before making any further additions to a fleet which is quite sufficient for the present restricted trade of the country. And although the Government have granted a loan of 50 million marks for the relief of unemployment in the German shipbuilding yards, the majority of the German shipbuilding companies are in the throes of a severe financial crisis. The annual report of the Deutsche Werft, for instance, reveals the fact that during the past two years the company have incurred losses amounting to more than half their share capital—the majority of this loss being due to the Furness Withy contract referred to above, while it remains to be seen whether the whole of the loss on this contract has yet been disclosed. The stabilization of the currency has resulted in an acute shortage of liquid capital, so that firms have been obliged to borrow at excessively high rates of interest. It was stated at the beginning of the year that the German banks themselves were paying as much as 9 per cent. on six weeks' deposit and 6 per cent. on current accounts. Taxation is roughly three times the pre-war figure.

The outstanding event of the year in Germany has undoubtedly been the collapse of the great Stinnes group, following on the death of Herr Stinnes. In this connection it will be recalled that the Stinnes fleet (24 ships of 146,270 tons gross) was purchased by the Deutsch-Austral and Cosmos Lines after the Hamburg-America Line offered for the ships to the limit of their financial power. The total sale value of the Stinnes fleet was some 27 million marks, but owing to the financial difficulties of the Stinnes Trust the ships had been mortgaged for some 21 million marks, so that the purchasers only paid some 6 million marks in hard cash for the whole share capital of the Stinnes Lines, and an increase in their own share capital was not necessary.

The position of the German shipbuilding yards has become rapidly worse in recent months, partly owing to high taxation and partly owing to competition for foreign orders with such countries as Italy and France, whose currencies are still not stabilized. It was recently stated that the German yards had only sufficient work to employ them to one-sixth of their output capacity. While this is perhaps an extreme statement it is interesting to record that whereas in June, 1923, Germany had 72 merchant vessels of 301,199 gross tons under construction, at the end of the June quarter of 1926, this was reduced to 41 vessels of 148,851 gross tons.

On the other hand, the German shipping industry appears to be in a much more favourable position. The tonnage surrendered under the Versailles Treaty, amounting to some 4½ million gross tons, has been replaced to the extent of some 2½ million tons. Germany's fleet is more or less adequate for her trade at the moment, and it is considerably more efficient than that of other countries by reason of the fact that it is comparatively modern. Added to this, very few ships appear to be laid up, so that the German shipowner has not to face the maintenance of idle tonnage, which forms so serious a factor in the financial position of the shipping companies of most other maritime countries.



HAMBURG-AMERIKA LINER HAMBURG.

(Built and engined by Blohm & Voss, Hamburg.)

[*See page* 190.

In this connection the recent re-purchase by the Hamburg-America Line of 3 large liners from the Harriman interests, at a figure of somewhere about 8 million dollars, is significant.

It really seems that the Versailles Treaty, by preventing German shipping from participating in the general post-war inflation, is responsible for Germany's shipping to-day being in a comparatively stable position. That the shipbuilding yards of Germany are not in an equally favourable position is due in large measure to the inflation of the Mark, which on the one hand permitted them to dispose of their debenture interest and which on the other placed them temporarily in a position to quote extraordinarily low figures when tendering for shipbuilding orders.

If the post-war period has done nothing else, it has demonstrated with some clearness that a policy of inflation is ultimately fatal to economic prosperity, and undoubtedly Germany's shipyards have sooner or later to face the problem of reorganization, before they can be said to be on a sound basis once more.

Italy.

We have said that the war did not initiate any new movements, but merely exaggerated and accelerated those already in progress. This statement does not controvert the fact that the furnace of war contained a fiery crucible of political thought and tendency which in cooling has crystallized into forms which are new and strange. The attention of political economists everywhere is directed to the two outstanding phenomena with which the war has presented us—the Russian Revolution on the one hand, and the Fascism of Italy on the other. While it is too early to judge either of these two new political concepts without prejudice, the world as a whole cannot escape their effects. Particularly is this true in the case of Italy, where the unification of national endeavour has led to a renaissance of national ambition on a scale which is unparalleled even at a time when such recrudescences have been the order of the day.

The outstanding event in the world's mercantile marine over the past two or three years has undoubtedly been the revival of shipping and shipbuilding in Italy at a time when most other nations have been concerned mainly in cutting their ship losses. This activity is due almost entirely to national maritime ambition, and while any one would hesitate to undertake the rôle of prophet it remains to be seen whether Italy can escape the general fate of countries whose political aspirations have urged them to resort to artificial stimulation rather than awaiting the natural developments of economic necessity.

Italy to-day possesses what is perhaps the most complete scheme of shipbuilding subsidy that the world has ever seen, and it may be of interest to summarize the development of the subsidy policy in Italy.

The policy had already been formulated before the war, when it found formal expression in a Decree of 1911, which provided that:

(1) One-fourth of the metallic material required for shipbuilding purposes was

allowed to be imported free of Customs duties, up to an amount not exceeding 120 kgs. per registered ton.

(2) A subsidy of 90 lire per registered gross ton of steel vessels should be granted.

(3) A subsidy of 15 lire per I.H.P. for steam engines and auxiliaries should be granted.

(4) A subsidy of 12 lire per ton weight for boilers and auxiliaries, and of 13 lire per ton weight for auxiliary machinery not connected with propulsion should be granted.

This was superseded under the new regime by a Decree in 1923 which extended the operation of the previous law both to repair work and to the breaking up of vessels, and which provided :

(1) Importation free of Customs duties of material intended for shipbuilding purposes up to a limit of 480 kgs. per registered gross ton of steel vessels, and 100 kgs. per registered gross ton for wood or concrete vessels.

(2) For material ordered at Italian steel works, a grant of 12 lire per 100 kgs.

(3) A subsidy of 55 lire per registered gross ton for steel vessels, 20 lire for concrete vessels, and 15 lire for wood sailing vessels.

(4) Importation free of Custom duties of engine and boiler material up to a limit of 140 kgs. per I.H.P.

(5) For material ordered at Italian works, a grant of—
- (*a*) 12 lire per 100 kgs. up to a limit of 55 kgs. per I.H.P. for steel plates and sections ; and
- (*b*) 70 lire per 100 kgs. for steel seamless tubes, up to a limit of 11 kgs. per I.H.P., and for corrugated furnaces, up to a limit of 6 kgs. per I.H.P.

(6) Subsidies of :
- (i.) 20 lire per I.H.P. for steam engines and auxiliaries.
- (ii.) 23 lire per B.H.P. for turbines.
- (iii.) 16 lire per 100 kgs. for boilers and auxiliaries.
- (iv.) 18 lire per 100 kgs. for auxiliary machinery not connected with propulsion.
- (v.) 50 lire per B.H.P. for oil or internal combustion engines, including auxiliaries.
- (vi.) The same amount of subsidy to be granted if the engines are fitted as auxiliaries on board sailing vessels.
- (vii.) In addition, vessels benefiting by the subsidy were to be exempt from payment of Income Tax for a period of 5 years in the case of vessels sent to sea before the end of 1923, and 3 years in the case of those sent to sea during the years 1924-26.
- (viii.) Furthermore, a grant of 6 million lire (at the rate of 4 lire per registered gross ton) is provided for the breaking up of steel merchant vessels of Italian nationality provided an equal or greater amount of tonnage was built as compensation.

These arrangements terminated on 1st July, 1926, when they were again superseded by new provisions which are summarized below :

(1) Import duty not payable on the material necessary for construction up to a limit of 480 kgs. per gross ton for steel hulls over 1,000 gross tons, and of 520 kgs. per gross ton for wood and concrete vessels of less than 1,000 tons.

(2) Under the same conditions for weight, a payment to shipbuilders of an amount of 7.50 lire per ton for plates, etc. manufactured in Italy with materials free from Customs duties.

(3) A construction bounty as follows :—
- (*a*) For steel hulls, 32 lire per gross ton.
- (*b*) For concrete hulls, 12 lire per gross ton ; and
- (*c*) For wooden hulls, 9 lire per gross ton.

These amounts are for the construction of vessels launched within 4 years from the enforcing of the present Decree and are to be reduced by 10 per cent. during the following 4 years and by 15 per cent. during the next 4 years, after which the present Decree becomes inoperative.

(4) Steel vessels to obtain bounties are to be designed so as to render possible the fitting of certain guns in case of war, and plans have to be submitted to the naval authorities before construction commences.

(5) Importation free of Custom duty is temporarily to be allowed in the case of the following material :—
- (*a*) Material necessary for the construction of hulls, propelling machinery,

boilers, auxiliaries, etc. for pleasure yachts, whether for Italian or foreign ownership, for merchant tonnage ordered by foreign shipowners, for machinery to be exported, and for warships ordered by foreign companies.

(*b*) Materials, machinery, boilers, etc. required for the repair of the above classes of vessels.

It will be seen that the latest requirements, while offering a subsidy which is in some respects lower than the previous allowances, now widen the scope of their operation to a considerable extent. It is also to be noted that the Decree is to remain in force for no less than 12 years. This argues a strong determination on the part of Italy to become one of the foremost maritime countries of the world. Whether this ambition is likely to be realized is in the lap of the future.

Russia.

It is interesting to contrast the subsidy policy of Italy with the arrangements now obtaining in Russia. Lloyd's Register Shipbuilding Returns for the June quarter of 1926 show a total of 12 vessels of 35,000 gross tons under construction in Russia, but this is by no means indicative of the present shipbuilding activity of the Soviet Union. It is apparently the policy of the Council of Labour and Defence that the Soviet merchant fleet should be sufficient to deal with 25 per cent. of the sea transport requirements of the country. To this end a sum of over 200,000,000 roubles has been allotted for the construction over a period of 5 years of some 200 vessels of 700,000 gross tons. It is understood that the matter is regarded as being so urgent that a certain number of these vessels are to be constructed outside Russia. In this connection the difficulty appears to be the financial stability of the Soviet, which is naturally in question. It was recently stated that certain German shipbuilders were prepared to build vessels for the Soviet for a first payment of 10 per cent. of the cost of the ship, the remaining 90 per cent. to be redeemed over a period of 10 to 15 years.

It is doubtful whether any yards are really in a position to participate to this extent in the financing of the Soviet building programme, but there is evidence that owing to the high cost of shipbuilding material and the low rate of output by workmen in Russia, the cost of building ships in Soviet territory is somewhere about 150 per cent. more than the average in other countries.

Be this as it may, there is every reason for believing that an expansion in the Russian merchant fleet is economically justified. Russia to-day has only some 300,000 gross tons of merchant shipping, or roughly one-third of the pre-war figure ; furthermore, the present fleet consists in the main of very old and inefficient types of vessels.

France.

The total capacity of French shipyards before the war was about 300,000 gross tons and the mean output was some 50,000 tons below this figure. Since the war, however, the capacity of the French yards has very greatly increased. Whereas in 1914, there were some 56 berths capable of building seagoing vessels above 250 feet in length,

in 1925 there were no less than 89 such berths. On the other hand, the output for the year 1925 amounted to only 35 ships of 75,569 gross tons, or, say, roughly 20 per cent. of the country's capacity. At the commencement of this year, therefore, the situation in French yards was critical in the extreme. Since that time, however, the depreciation of the French currency has enabled the French yards to obtain a number of foreign orders, and at the end of June over 150,000 tons of vessels were under construction, while an amount corresponding to the total output of the previous year had already been launched. It is doubtful, however, whether the present advantage can be maintained when stability is obtained in French finance, and it is significant that although one of the leading French shipyards made a net profit of some 3 per cent. over the year 1925, no dividend was declared, the directors apparently considering that the future financial prospects of the company were by no means promising.

Japan.

During the year 1925 Japan launched some 60,000 tons of merchant shipping, as compared with an average of about the same amount, or slightly less, in pre-war days, and a peak production of over 600,000 tons in 1919. Since the war the tonnage output has been gradually decreasing and the position is now even worse than it was some 12 months ago. This is in spite of the fact that the Japanese Government has decided to compensate Japanese shipyards for lost warship work, due to the abandonment of the Japanese Fleet Expansion Plan after the Washington Conference, which compensation is understood to be of the order of 20 million yen. Some new liner tonnage is, however, understood to be in prospect, which may alleviate the position.

On the other hand, Japanese shipping companies are in a much more favourable position, largely owing to the elaborate subsidy schemes which are in operation. The system of loans to shipping companies is not favoured by Japan, but under the guise of contracts for the carriage of mails, subsidies to the order of some 7 or 8 million yen a year are furnished by the Diet with a view to improving communications between Japan and foreign countries.

The steam and motor vessels now owned in Japan amount to nearly 4 million gross tons as against only 1½ million gross tons in 1913, and while a good deal of this increase may be reasonable and legitimate, it is to be anticipated that in the not very far distant future Japan will have to face a period of growing difficulty in her shipping industry, since this appears to be the ultimate and inevitable fate of countries which subsidize shipping.

Conclusion.

From what has been said above it will be seen that the past year has been both confusing and depressing as regards the world's merchant marine. The war exaggerated the trade depression which was already foreshadowed by the beginning of 1914, and at the same

MESSAGERIES MARITIMES PASSENGER MOTOR LINER THÉOPHILE-GAUTIER.
(Built and engined by the Ateliers et Chantiers de France, Dunkirk.)

[*See page* 189.

time it accelerated to an alarming extent the construction of tonnage; and although the maritime world is gradually realizing the cause of its present difficulties, there is very little evidence of any general tendency to deal with the problem promptly and courageously. Apart from a very general desire for artificial stimulants in the form of subsidies, the doctrine of "laissez faire" seems to be almost universal, except for the somewhat hysterical acclamation of the motorship as the panacea of all our difficulties.

This is a condition which cannot continue indefinitely; the longer a return to efficiency in sea transport is delayed, the harder will it become, and no revival in world trade can result in any real return to prosperity in shipping and shipbuilding unless the world's mercantile marine returns to a state of efficiency at least comparable with that which existed prior to the war.

The one cheerful element during the past year has been the growth of co-operation within the shipping and shipbuilding industries. Our only hope of extrication from the present difficulties lies in the extension of that movement, actuated as it is by joint sacrifice and goodwill. That alone is paving the way to such an understanding of our problems as will enable our merchant marine to become the competent handmaiden of international commerce.

WESTCOTT ABELL.

CHAPTER XII.

Freight Developments of 1926.

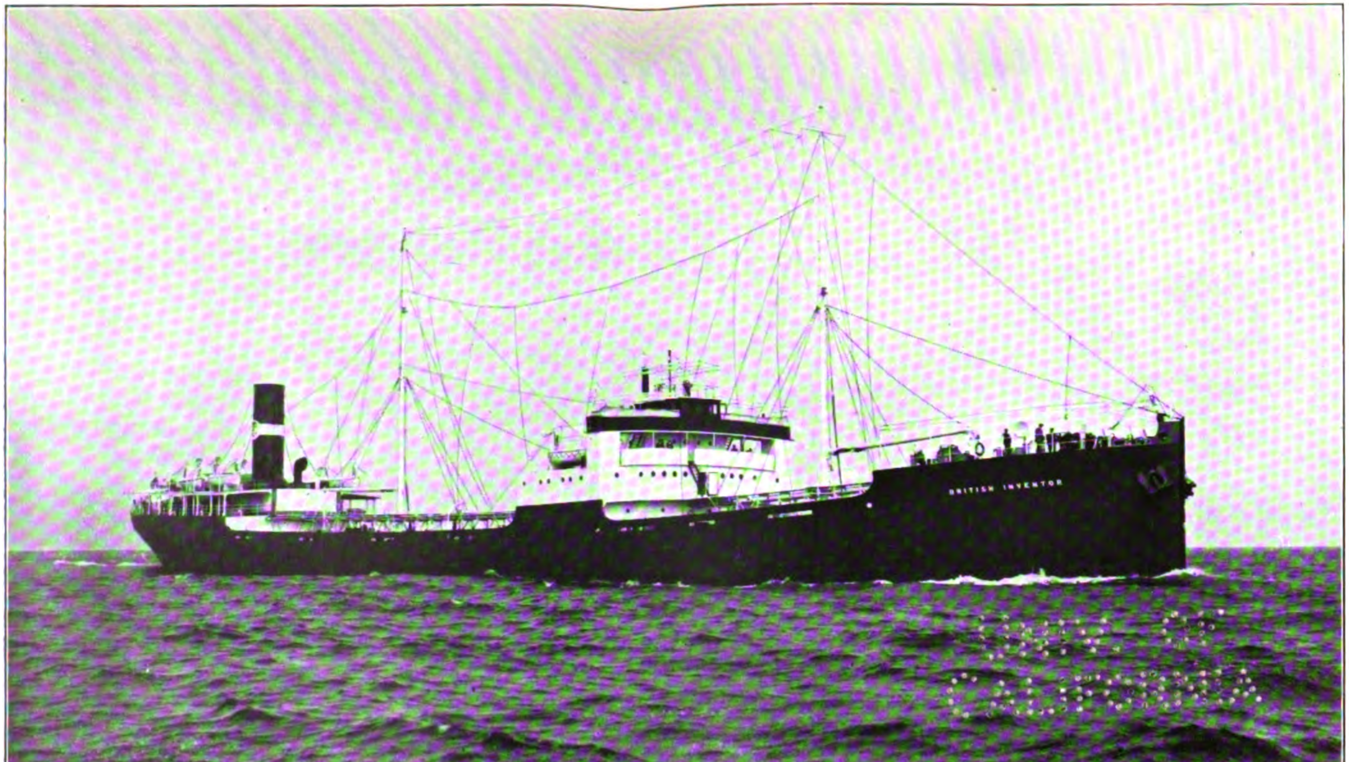
In these days distinctions are drawn between sheltered and unsheltered occupations. British shipping is an outstanding example of an unsheltered industry, for those engaged in the overseas shipping industry of any one nation are exposed to the keen competition of the shipping services of all other countries. Since the years immediately following the war, the supply of shipping has been much in excess of the demand for it. Consequently, in accordance with the law of supply and demand, shippers, *i.e.* those who have wanted cargo space, have been most favourably circumstanced to dictate the terms on which they could fulfil their needs.

With shipowners of all nations anxious to secure a share of such traffic as is available, it follows that the owners who could afford to quote the lowest rates of freight are often those with the lowest working costs. Those owners are not British. They belong to some of the Continental nations. It is true that there has been always a discrepancy between British and certain Continental working costs, but this margin has been much widened since the war.

To some extent the rates quoted in the open freight markets of the world are subject to the terms which Continental owners are able to accept. Yet price, although important, is not the only factor which charterers consider. It will not be denied that, broadly, the standing of owners as a body is in some mercantile marines better than that of others. The British Mercantile Marine is still the largest in the world, and its units, as a rule, are of high character. Charterers are often ready to pay a slightly higher rate for a British ship, and particularly for a time-charter. In the case of some of the older vessels in foreign mercantile marines there has also to be taken into account the question of greater cost of insurance on the cargoes. Further, much depends upon management, as, for instance, on that form of prescience which enables an owner to place a ship in a particular position at the psychological time, so that he is able to meet the inquiry of merchants with the most favourable terms. Happily, owing to careful study of markets, coupled with experience, this often happens with British ships, and so the rates for these are frequently, in practice, the most advantageous that could be quoted for merchants.

Agreements in Liner Trades.

The same disparity between British and Continental working costs has been noticeable in the liner trades, and it was responsible



"BRACKETLESS" OIL TANKER BRITISH INVENTOR.

(Built by Palmer's Shipbuilding and Iron Co. The first vessel constructed on the Isherwood Bracketless system.) [*See page* 186.

a few years ago for the quotation of lower freight rates in the regular trades from the Continent than from the United Kingdom. These lower rates were made possible, partly, by lower working expenses at Continental ports. Shippers of general merchandise by regular liners need rates of freight that are fixed for considerable periods, so that in making their estimates of transactions they may know what the cost of freight will be. Stability of freight rates is also of importance to importers. The lower rates of freight quoted in the liner trades were particularly noticeable in the case of Germany before she re-established her currency on a gold basis. When this monetary adjustment took place German owners were generally glad to agree with British and other owners for the quotation of equivalent rates of freight from the Continent and the United Kingdom. This similarity of freight rates has since been maintained, with the one notable exception of the trade to South America, to which reference will be made later.

Coal and Grain Freights.

The surplus of ordinary cargo shipping over the demand for it has continued, and during the first five months of 1926 the movement of freight rates was generally downwards. Coming events often cast their shadows before them, and, in the early part of 1926, the threat of a stoppage of coal production in the United Kingdom exerted some effect on freight markets. Some consumers abroad who were accustomed to look to British exporters for supplies did show signs of buying while they could, although others refused to believe that there would be a complete stoppage of work in the British coal fields. However, there was a steady demand for coal from South America which coincided with extreme quietness in the homeward grain trade. For months there was very little employment for ships in the homeward trade. Rates fell to very low levels, and owners were obliged to send their ships long voyages in ballast from South America, and notably to Chile and South Africa, to bring home cargoes. In some cases vessels were laid up idle in the River Plate to await a revival of the demand for tonnage. In other instances ships were brought home to be laid up in United Kingdom ports. With such conditions ruling, rates for outward cargoes of coal advanced very considerably. Terms had, in fact, to be quoted which would cover owners against a loss on a round voyage. Usually in the South American trade the outward coal freights and the homeward grain freights follow a see-saw movement, the one rising as the other falls. In the following table it will be seen how the outward coal freights rose and how the homeward grain freights declined. It will be noticed that, in April, when the homeward grain freights from the River Plate were on a higher level, the coal freights from this country to Buenos Aires declined. Actually, just before the cessation of work in the collieries of the United Kingdom, coal freight rates were practically back to the level at the beginning of the year. That was largely because stems were very difficult

to secure, and so there were more vessels offered for the trade than could be employed.

Coal Freights Outward.		Grain Freights Homeward.	
Cardiff to Buenos Aires.		River Plate to U.K. Continent (Up-River).	
1926.	Per ton.	1926.	Per ton.
	s. d.		s. d.
January 1	15 6	January 1	20 0
January 14	18 3	January 14	15 0
February 14	21 0	February 14	13 6
March 14	19 6	March 14 (from B. A.)	11 6
April 14	17 0	April 14	19 0
April 30	15 9	April 30	17 0

Recovery in Grain Rates.

Later in the year the homeward grain markets recovered. The South American is at least one of the most important markets for owners of cargo vessels, and it is one of the most uncertain. Long periods of stagnation are followed by months of activity, or little bursts of activity are interspersed with weeks of idleness. In 1926 the steady recovery in the homeward grain trade occurred at a time when the stoppage of coal production in the United Kingdom prevented exports. Consequently, the conditions which had ruled in the earlier months of the year were inverted. The homeward grain freights had to be calculated, instead of the outward coal freights, on such a level as might cover the costs of the round voyage, or trade had to be considered which might enable an owner to place his ship in a position to secure some employment homeward. The following homeward grain freights compare with those quoted above for the first five months of the year:

Grain Freights from River Plate (Up-River).

Date.	Rate.
	s. d.
May 14	18 6 per ton.
June 14	19 3 „
July 14	27 0 „
August 14	28 0 „
September 14	26 6 „

These rates show large advances on the figures to which the quotations fell in the spring.

Neither the high outward coal freights nor the high homeward grain freights were entirely satisfactory to owners. Conditions suit them best when outward and homeward cargoes can be secured and moderate rates of freight can be quoted for each part of the voyage. Still, shipowners have to take things as they find them.

Increase in Idle Tonnage.

The stoppage of coal production in the United Kingdom brought about a new set of conditions. The figures of idle tonnage prepared by the Chamber of Shipping of the United Kingdom for July 1 indicated part of the effect. Usually, employment in midsummer is less satisfactory than in the spring. A certain midsummer quietness is to be expected, but in none of the previous five years had there been such an increase on the figures for April 1 as was recorded for July 1, 1926. The figures for the past six years are set out in the following table. It will be seen that, on July 1, there were no fewer than 518 ships, of an aggregate net tonnage of 859,739 tons, laid up idle, as compared with 248 of 359,848 tons on April 1. There was thus an increase of 270 in the number of vessels and of 138·9 per cent. in the tonnage.

—	Tonnage laid up on			
	April 1.		July 1.	
	No.	Net tons.	No.	Net tons.
1926	248	359,848	518	859,739
1925	312	393,062	430	777,179
1924	255	410,365	310	470,073
1923	321	546,555	372	709,102
1922	484	836,619	583	1,112,332
1921	1,165	1,707,271	1,023	1,852,412

Naturally large increases occurred at the coal ports of Newcastle and Cardiff. A larger percentage of idle ships was also recorded in the Thames and Mersey, which are not so dependent on the export coal trade.

Freight Index Numbers.

While there was this striking increase in idle tonnage, the freight index number of the Chamber of Shipping for June was higher. Rates generally in the freight markets during the summer rose, and an increase in the amount of idle tonnage, coupled with an advance in freight rates, could hardly fail to strike the ordinary observer as somewhat paradoxical. The index number for June at 23·71 was higher by 4·08 per cent. than that for May, and 0·21 per cent. above that for June 1925. For July there was a further rise to 26·66 which was 20·8 per cent. higher than that for July 1925. The comparisons between May and June were not quite identical, since, in June, freights for 14 routes were available, as compared with 10 only for May. If the average for 1913 be taken as 100, the index number for June was 101·32, and that for July, 113·93. Throughout the greater part of the first half of 1926 the index number was below the average for 1913, the figures for the first eight months being as follows :—

January	106·9	May	97·4
February	98·2	June	101·32
March	93·4	July	113·93
April	96·7	August	116

The rise in the June and July rates clearly reflected the demand for coal tonnage in the North Atlantic trade. When comparing rates of freight in 1926 with those for 1913 the level of working expenses should, however, be taken into account. The annual report of the Chamber of Shipping issued in February declared that, "Of running costs at sea the year has witnessed a welcome reduction in the price of bunker coal," but it added that, "The general cost of running steamers is about 90–100 per cent. above pre-war." The fact that, for a considerable part of 1926, freight rates were below the pre-war standard, while working expenses were practically doubled, indicated the serious conditions for shipowners. Further, prices for bunker coal advanced very considerably after the coal stoppage, and, as fuel represents a very important part of working expenses, the level of these would have risen in 1926 much above that mentioned by the Chamber in the annual report for 1925.

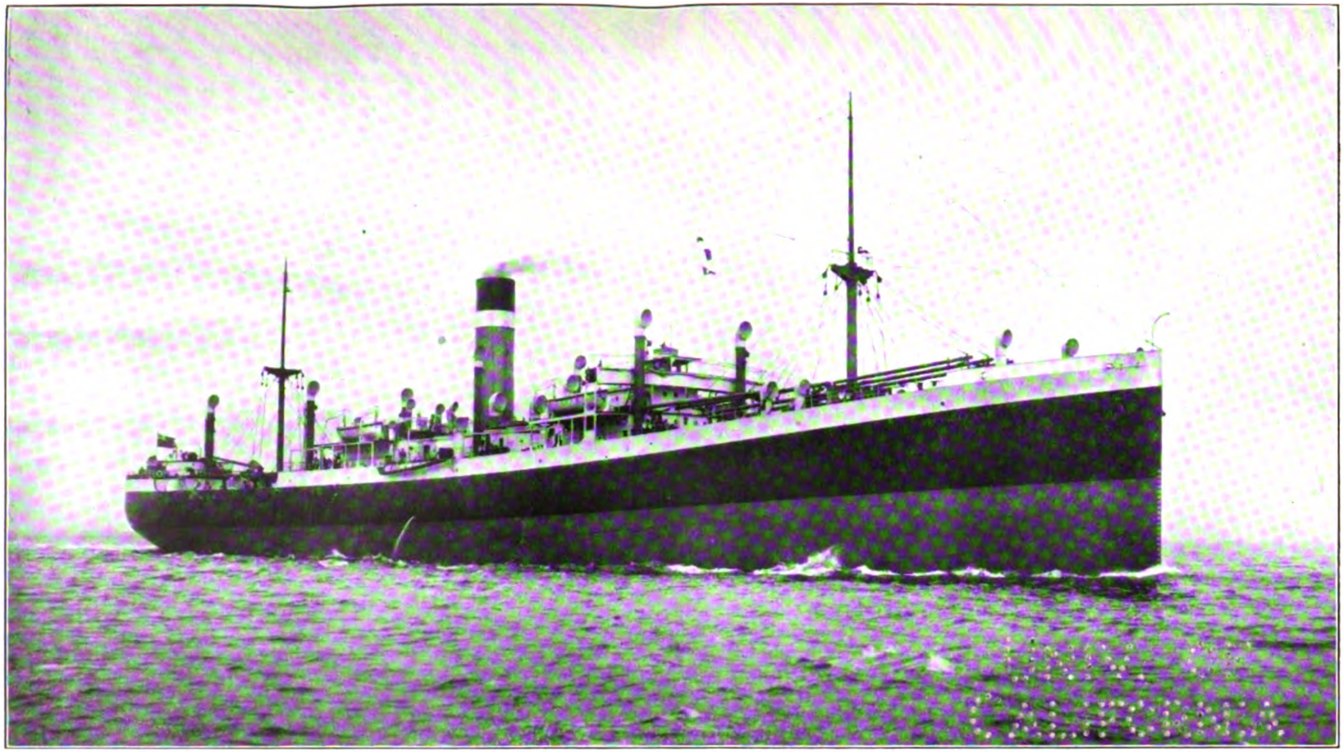
Higher Prices for Fuel.

As illustrating the higher prices for coal, from 29*s.* to 33*s.* 6*d.* per ton were being quoted at Continental ports early in August for Westphalian coal. These prices compared with about 16*s.* and 19*s.* per ton quoted before the coal stoppage for screened and unscreened coal respectively. They also compared with a price of about 45*s.* 6*d.* per ton quoted at the same time in London for "Continental unscreened coal." As a matter of fact, some managers found that if they could send their ships to sea fully laden they could just cover their working expenses on a basis of as much as 30*s.* per ton for coal. Beyond that price they refused to go, saying that the cost of coal would swamp their freight earnings.

Incidentally, it should be remembered that the figures of idle tonnage prepared by the Chamber of Shipping relate, mainly, to British vessels, and so they are no measure of the idle tonnage of all nations throughout the world. The rise in freight market rates was directly attributable to a strong demand for tonnage to load American coal for this country. At least 1000 vessels must have been so chartered down to mid-September. Assuming that the average capacity of the vessels engaged in the coal trade from North America was 6,000, then the total tonnage chartered for American coal would be 6,000,000 tons. Some of the vessels would, however, have made more than one round voyage. Still, as far as the effect on markets generally was concerned some 6,000,000 tons of cargo-carrying capacity were withdrawn from the coal trade from the United States during the summer and early autumn.

Voyages with American Coal.

Every day throughout the summer months saw a certain number of vessels chartered. The business did not begin at once. And when it was in full swing it did not equal in numbers the vessels which



ELLERMAN LINER CITY OF LYONS.

(Built and engined by Swan, Hunter & Wigham Richardson, Ltd.)

[*See page* 188.

are normally chartered in the British export coal trade. That explains the increase in the idle tonnage, in spite of the chartering of vessels to transport coal from the United States to this country. While ships were being secured to load American coal for Great Britain and Ireland, vessels would, normally, have been chartered to carry coal from the United Kingdom to many parts of the world. They would have proceeded to South America, to the Atlantic Islands, to the Mediterranean ports, and to Port Said and elsewhere. Some of these centres had doubtless, as was indicated in an earlier page, laid in supplies during the early part of the year, but in so far as these supplies would have been absorbed they would have needed to take coal from other quarters, and notably from the United States. It may have been that in these other trades foreign shipping participated to a greater extent than British vessels.

Large Cargoes of Coal.

One factor in the freight situation was that the demand for vessels to load American coal was mainly for ships of large size, whereas in the British coal export trade there is room for vessels of all descriptions. The smaller ships trade in the short-distance routes and in the Mediterranean, while larger vessels proceed to South America and Port Said. There was a discrepancy between the rates quoted during the summer for large and small vessels to load American coal for this country. For instance, at the same time that 14*s*. 6*d*. per ton was accepted for a large steamer as much as 17*s*. 6*d*. per ton had to be paid for a smaller vessel for an out-port. A lower rate of freight per ton can, of course, be quoted, as a rule, by the owner of a large vessel than of a small ship. The buyers of the American coal were mainly large consumers, such as railway companies, which could deal with big cargoes. Sometimes, however, the consumers were in a smaller way of business and could not take the large ships, and it was necessary for them to secure smaller ships at a comparatively higher cost. In the main, the demand for tonnage to bring American coal to this country was met by the larger vessels, and it is these ships which are, to a considerable extent, engaged in the long-voyage cargo trades, and so their employment in the North Atlantic route had its effect in other long-distance trades. In September 20*s*. or more was paid.

Changes in Representative Rates.

Rarely has an improvement in one route alone been found sufficient to affect markets generally. In 1926 the recovery in the South American homeward grain trade synchronized with the demand for coal tonnage in the North Atlantic route. On next page are shown the rates quoted in a number of trades at the beginning of the year, just before the coal stoppage, and on August 14. The comparisons show how rates fell during the first five months of this year and then advanced when the effect of the North American coal demand was being felt.

HOMEWARD FREIGHT RATES IN 1926 PER TON.

Route.	Jan. 1.	April 30.	Aug. 14.
	s. d.	s. d.	s. d.
U.S. Atlantic Ports to U.K. (per quarter)	3 1½	—	—
Pacific Coast to U.K.	30 0	27 6	31 3
River Plate (Up-River) to U.K.	20 0	19 6	28 0
Chile to U.K. Cont. (Nitrate)	26 0	18 0	—
Burmah to U.K. Cont. (Rice)	27 6	16 0	23 0
Vladivostok to U.K. Cont. (Beans)	32 6	17 6	30 0
Australia (S. Victoria or Sydney) to U.K. Cont.	43 9	28 9	42 6
Bilbao to Cardiff (Ore)	6 6	6 0	—
	$ c.	$ c.	$ c.
U.S. to South America (Coal), Rio	3 60	3 50	4 0
" " " Lower Plate	4 0	3 75	4 50

Costs of sea transport were discussed in the Presidential Address at the Chamber of Shipping by Mr. Walter Runciman, M.P. He declared that in 1925 outward freights from the United Kingdom represented only 8 per cent. of the selling price of the manufactured goods which were carried, and that the food sold in this country bore scarcely any trace of the freights charged for its transport. He recalled how meat was brought from Argentina at four-fifths of a 1*d.* per pound; grain from New York at a figure equivalent to only ¼*d.* for a quartern loaf; and rice from Rangoon at $\frac{3}{20}$*d.* per pound. Even our clothes bore, he pointed out, scarcely any trace in their price of the long journey which their wool and cotton had made across the world beneath and between decks. The freight paid on the wool which went to make a square yard of woollen cloth would scarcly pay the price in the retail market of two single yards of its warp or weft, while the cost of carriage of the raw cotton which went to make a cotton sheet was about one halfpenny.

AUSTRALIAN REDUCTIONS.

But for the disastrous disturbances in Australian ports during the closing months of 1925 and the beginning of 1926, freight rates on produce from Australia would probably have been reduced earlier. Those disturbances, which involved the detention of British liners in Australian ports for long periods had the effect of benefiting much foreign services. The vessels of the Australian Commonwealth Line were also able to sail unhindered. It was really ridiculous, although in a practical way serious, that the foreign vessels should have been able to sail with full cargoes, part of which should have been sent by the British vessels, while the latter, whose crews were paid rates much above those of the foreign ships, were attacked, with a view to securing still higher wages. However, the position of the foreign lines was strengthened by the disturbances. By July 1926, the position had become such that all the freight rates to Great Britain were reduced. The rates on wool, sheep-skins, fur-skins, hides, meat and cheese were lowered by ⅛*d.* per pound. These reductions meant that beef would be brought from Australia to this country—a distance of about 12,000 miles—for a rate of freight of

only $\frac{3}{4}d.$ per pound, mutton for 1*d* per pound, and lamb for $1\frac{1}{4}d.$ per pound.

New Zealand Rates Lowered.

The reductions in the Australian trade were followed a month later by a lowering of the rates on produce from New Zealand. In the past rather higher rates had been quoted from New Zealand than from Australia, owing to, among other factors, the large number of calls which the liners make on the coast of New Zealand to collect cargo. In August, 1926, the New Zealand rates were brought practically to a parity with those from Australia, the reductions amounting to $7\frac{1}{2}$ per cent. on the previous rates for the first three years and to $12\frac{1}{2}$ per cent. for the fourth year. An important feature of the New Zealand trade is that the control of meat, dairy produce and fruit, is now in the hands of Boards which make contracts for the whole of the shipments. The new rates are about 50 per cent. above the pre-war level, while working costs are declared to be still fully 100 per cent. above the pre-war standard. Shipping managers in both the Australian and New Zealand trades have hoped that there might be some compensation for the lower rates in larger shipments, but that there can be very little profit, if any, in such terms is now generally agreed by managers, including those who have experience of the cost of carrying produce in other routes. It is to be feared that the granting of the minimum rates of freight must cause owners to look with extreme care on working expenses. Their natural inclination would be towards even better services than have been provided in the past, but with sailings maintained on the basis of, at best, a very narrow margin of earnings over outgoings, the costs of construction and maintenance will have to be considered very closely.

South American Freight Fight.

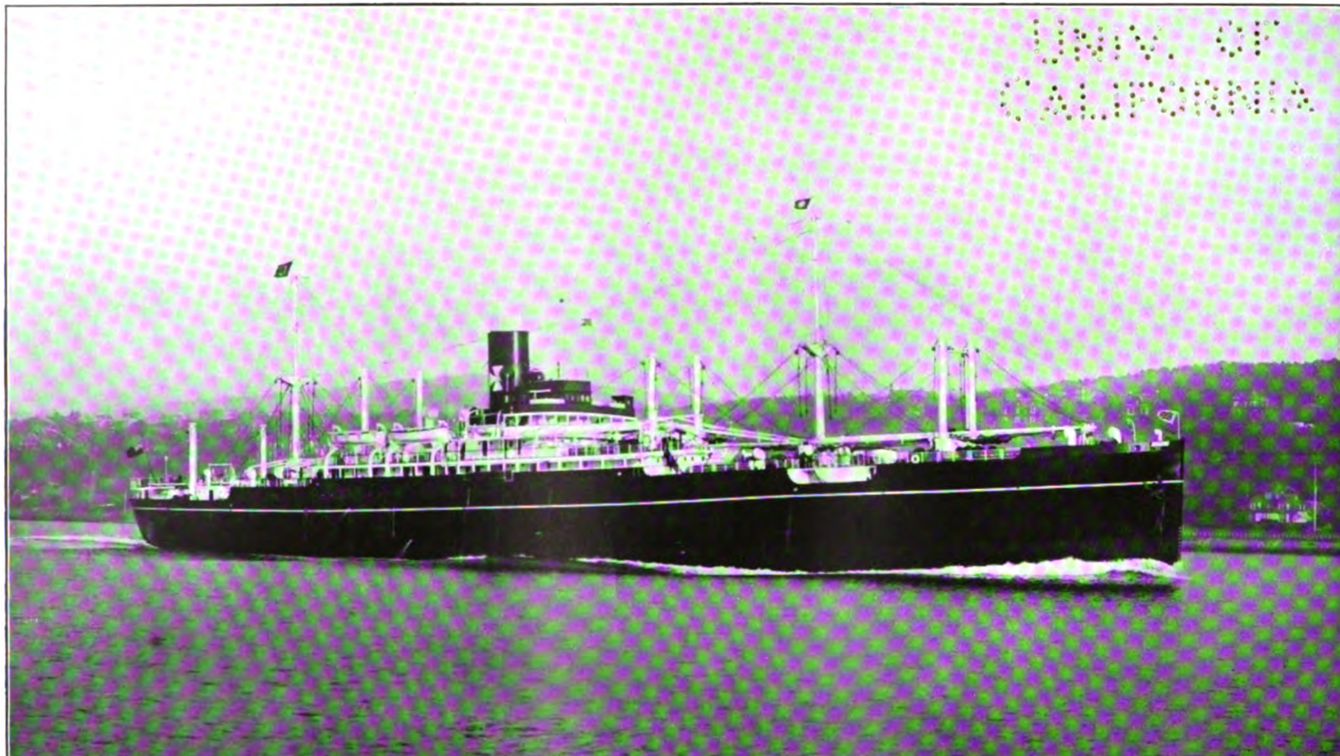
The lack of adequate employment for tonnage in the ordinary freight markets appeared to be partly responsible for a peculiar condition of affairs in the cargo trade between Europe and South America. In accordance with the principle referred to at the beginning of this article, similarity of rates from the Continent and the United Kingdom to South America had been agreed between the British and Continental lines. Early in 1926 a new service of British vessels was instituted from Hamburg and Antwerp to South America at reduced rates of freight. The British lines engaged in the Conference services refused to accept cargo at lower rates from the Continent than the United Kingdom on the ground that it would not have been fair to British exporters for them to do so. Yet the Continental liners were, in the circumstances, under no obligation to refrain from accepting lower rates from the Continental ports, and a very keen fight ensued, cargo being accepted on terms, which it was alleged, must involve the lines in serious loss. Indirectly, the fight had its effect on British exporters, since the goods of their Continental competitors were being carried at rates far below those

which they could obtain from the United Kingdom. It is likely that had conditions in the ordinary freight markets been generally more satisfactory, the competitive service would not have been instituted. The idea was, apparently, that the vessels in the new service should carry general cargo outwards and load grain homewards.

Effects of the Coal Stoppage.

Some owners will doubtless have gained from the altered circumstances due to the employment of many vessels in bringing coal to the United Kingdom, but it is to be feared that 1926 will be remembered mainly as a year in which trade recovery received a serious setback from the prolonged stoppage of coal production in the United Kingdom, and in which working costs advanced very considerably as the result of the high prices that frequently had to be paid for fuel, which constitutes so important a part of working costs. Happily, among the real leaders of the seamen there was appreciation of the extraordinary difficulties with which owners were faced and a desire to work together for a much-needed revival of prosperity for the British Mercantile Marine.

Cuthbert Maughan.



HOULDER LINE REFRIGERATED MOTORSHIP UPWEY GRANGE.

(Built and engined by the Fairfield Shipbuilding and Engineering Co., Ltd.)

[*See page* 187.

CHAPTER XIII.

Standing of the World's Merchant Fleets.

Although 1,142,035 tons of shipping was lost or broken up during 1925, by the summer of 1926 a further, though slight, net increase occurred in the amount of world's tonnage afloat, in spite of the depression in international trade, as the figures in Table I. indicate:

Table I.—Tonnage of the World.

Year.	Steam and Motor.		Sail.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
1913	23,897	43,079,177	6,694	3,890,936	30,591	46,970,113
1914	24,444	45,403,877	6,392	3,685,675	30,836	49,089,552
1915	24,508	45,729,208	6,212	3,532,561	30,720	49,261,769
1916	24,132	45,247,724	6,035	3,435,412	30,167	48,683,136
1919	24,386	47,897,407	4,869	3,021,866	29,255	50,919,273
1920	26,513	53,904,688	5,082	3,409,377	31,595	57,314,065
1921	28,433	58,846,325	4,773	3,128,328	33,206	61,974,653
1922	29,255	61,342,952	4,680	3,027,834	33,935	64,370,786
1923	29,246	62,335,373	4,261	2,830,865	33,507	65,166,238
1924	29,024	61,514,140	3,932	2,509,427	32,956	64,023,567
1925	29,205	62,380,376	3,711	2,261,042	32,916	64,641,418
1926	29,092	62,671,937	3,523	2,112,433	32,615	64,784,370

Owing to the War, statistics were not compiled regarding the vessels recorded in Lloyd's Register Books for the years 1917 and 1918.

During the twelve months there was an increase in the steam and motor tonnage in the world of 291,561 tons, and a decrease in the sailing tonnage of 148,609 tons, making a total *net* increase of 142,952 tons; the net increase from June 1924, to June 1925, was 617,851 tons. The countries showing the largest increases were Italy and Norway, the figures respectively being 211,969 tons and 161,263 tons. Of the vessels under the United States flag there was a decrease of 498,719 tons owing to the large number of vessels which were sold for breaking up purposes. The decrease in the tonnage registered in Great Britain and Ireland was 40,914 tons as compared with an increase of 334,873 tons during the twelve months ended June 1925.

Only a portion of these ships of 64,784,370 tons, however, are available for the carriage of merchandise and passengers, since allowance must be made for a number of vessels which may be described as performing auxiliary services for the mercantile marine. These deductions are set out in Table II.

TABLE II.—TONNAGE AVAILABLE FOR CARRYING GOODS AND PASSENGERS.

	Gross tons.	Gross tons.
Total tonnage of the world	—	64,784,370
Sailing Ships*	2,023,864	—
Oil Tankers (excluding vessels of less than 1,000 tons)	5,598,198	—
Oil Tankers (less than 1,000 tons) . . .	66,000	—
Trawlers and other fishing vessels . . .	809,828	—
Tugs and salvage vessels	369,000	—
Steam barges, dredgers, etc.*	627,000	—
Paddle steamers*	308,000	—
Lake vessels, United States	2,433,049	—
Lake vessels, Canada	258,046	—
		12,492,985
Tonnage available for passengers and goods		52,291,385
Comparative figures as shown in "Brassey's Annual, 1926"		52,820,235
Decrease in preceding 12 months		528,850

ORDER OF THE MERCHANT FLEETS.

Sailing tonnage is becoming of little importance in the sea-carrying trade. Table III. giving the comparative figures of the steam and motor tonnage in existence in the years 1914 and 1926, reflects in general terms the standing of the mercantile navies of the world :

TABLE III.—STEAM AND MOTOR TONNAGE.

Order of Fleets (1926).	Country.	1914.	1926.	Difference.
1	Great Britain and Ireland	18,892,000	19,264,000	+ 372,000
	British Dominions . .	1,632,000	2,689,000	+1,057,000
11	Denmark	770,000	1,049,000	+ 279,000
4	France	1,922,000	3,324,000	+1,402,000
6	Germany	5,135,000	3,062,000	−2,073,000
12	Greece	821,000	922,000	+ 101,000
8	Holland	1,472,000	2,553,000	+1,081,000
5	Italy	1,430,000	3,150,000	+1,720,000
3	Japan	1,708,000	3,968,000	+2,260,000
7	Norway	1,957,000	2,807,000	+ 850,000
10	Spain	884,000	1,126,000	+ 242,000
9	Sweden	1,015,000	1,295,000	+ 280,000
2	United States (Sea) . .	2,027,000	11,392,000	+9,365,000
	United States (Lakes) .	2,260,000	2,348,000	+ 88,000
	Other Countries . . .	3,479,000	3,723,000	+ 244,000
—	Total . . .	45,404,000	62,672,000	+17,268,000

It will be seen that there are now in existence 17,268,000 tons more steam and motor shipping than in 1914, equal to an increase of 38 per cent. The largest increase has taken place in the United States (nearly 9½ million tons), and in Japan (over 2¼ million tons). Increases of over a million tons have occurred in four cases : Italy

* Excluding those operating on the Great Lakes of America.

(1,720,000 tons), France (1,402,000 tons), Holland (1,081,000 tons), and British Dominions (1,057,000 tons). The increase of tonnage belonging to Great Britain and Ireland—372,000 tons—represents barely 2 per cent. of the tonnage owned in 1914, whereas the increase of tonnage owned abroad represents 63·7 per cent. of the pre-war tonnage.

The increase in the steam and motor tonnage owned in Great Britain and Ireland since 1892 amounts to practically 10⅔ million tons. The steam tonnage of the following countries is now more than six times as large as it was in 1892: Denmark, Holland, Italy, Japan, Norway and Sweden. The most remarkable increase has taken place in Japan, the steam tonnage of which country now reaches a figure equal to nearly twenty-eight times the total owned in 1892. The present steam tonnage of Italy is nearly ten times, and that of Holland nearly nine times, larger than in 1892.

Steamers and Motorships.

A great development has taken place in the use of steam turbine engines and of internal combustion engines. There are now 1,366 steamers of 9,137,675 tons fitted with turbine engines and 2,343 vessels (including auxiliary vessels) of 3,493,284 tons, fitted with internal combustion engines as compared with 730,000 tons and 220,000 tons respectively in 1914. While during the twelve months ending June 30, 1926, the tonnage of steamers fitted with reciprocating steam engines actually decreased by about 525,000 tons, there was an increase of 779,000 tons in the tonnage of motorships and of 37,000 tons in the tonnage of vessels fitted with steam turbines. The increase in the motorship tonnage recorded in Lloyd's Register Book, as compared with 1921, amounted to nearly 2,250,000 tons, representing an increase of over 176 per cent. on the total in existence five years ago.

An analysis of the type of machinery now employed at sea shows that 30 vessels, with a total tonnage of 473,000 tons, are fitted with a combination of steam turbine and reciprocating engines, and in the case of 40 vessels, with a tonnage of 120,512 tons, a comparatively new system of propulsion has been adopted, electric motors connected to the screw shaft, these motors being supplied with current from generators which are driven either by steam turbines or oil engines.

No fewer than 3,576 steamers of 18,243,539 tons are fitted for burning oil fuel, of which 773 of 4,924,542 tons are registered in Great Britain and Ireland and 1,851 of 9,002,007 tons are registered in the United States of America.

The figures in Table IV. enable a comparison to be made between the respective employment of coal and oil fuel at the present time as compared with 1914:

TABLE IV.

	1914. Per cent. of total gross tonnage.	1926. Per cent of total gross tonnage.
Sailing vessels and sea-going barges	8·06	3·26
Oil, etc., in internal combustion engines	0·45	5·39
Oil fuel for boilers	2·65	28·16
Coal	88·84	63·19
	100·00	100·00

TONNAGE BROKEN UP.

With reference to the falling off in the tonnage lost and broken up in the year 1925 as compared with the preceding two years, when the percentage of steam tonnage fell from 1·60 and 1·98 respectively to 1·09, it may be remarked that the figures vary greatly from year to year, as Table V. shows.

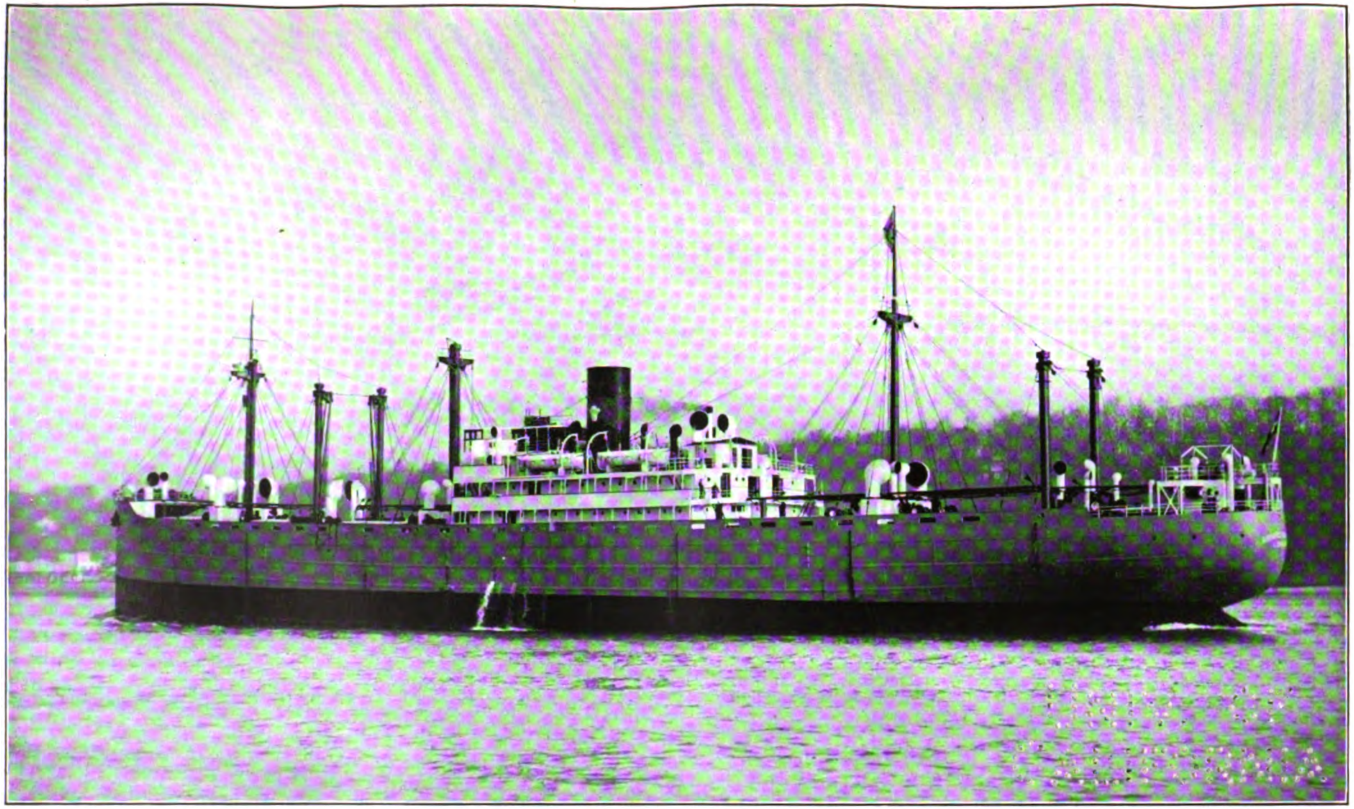
TABLE V.—TONNAGE LOST OR BROKEN UP.

Year.	Steamers and Motorships.		Sailing Ships.	
	No.	Tons (gross).	No.	Tons (net).
1916	1,288	2,724,041	511	284,224
1917	2,605	6,607,261	748	520,206
1918	1,294	3,332,791	325	159,919
1919	425	524,172	241	112,658
				(gross)
1920	370	518,595	215	138,959
1921	344	536,537	215	137,720
1922	511	743,866	205	143,946
1923	709	1,456,870	259	259,909
1924	777	1,614,662	239	243,017
1925	553	980,794	186	161,241

WAR LOSSES INCLUDED IN THE ABOVE TABLE.

Year.	Steamers and Motorships.		Sailing Ships.	
	No.	Tons (gross).	No.	Tons (net).
1916	942	2,189,079	245	139,609
1917	2,211	5,957,913	523	392,449
1918	911	2,674,428	141	69,744

During the period 1905–09 the minimum of steam tonnage, apart from sailers, which was broken up throughout the world in any one year was 120,003 tons, and the maximum 251,900 tons; during 1910–14 the variation was from 87,737 tons to 245,891 tons. During the years 1915–20, when the mercantile fleets of the



PRINCE LINE MOTORSHIP JAVANESE PRINCE.
(One of five sister ships built by Deutsche Werft, Hamburg.)

world were under the influence of the Great War, practically no tonnage was broken up, though many ships were lost as war casualties, the yearly average of breaking-up only amounting to 10,000 tons. Quite different conditions are shown for recent years, as Table V. reveals. "It is obvious," Lloyd's Register records, "that the tonnage broken up has an important bearing on the shipping position, and that if it were continued for some years on the high level reached in 1924, it would go some way towards solving the problems that confront shipowners; the figures for 1925, however, and the most recent returns, show a decided falling off in the amount of tonnage broken up."

The figures in Table VI. show the numbers of steamers and motorships in existence at the end of June, 1926, (1) under all flags, and (2) under the British flag, the ages of which are (*a*) 20 years and under 25 years, and (*b*) 25 years and over.

TABLE VI.—DIVISIONS OF AGE.

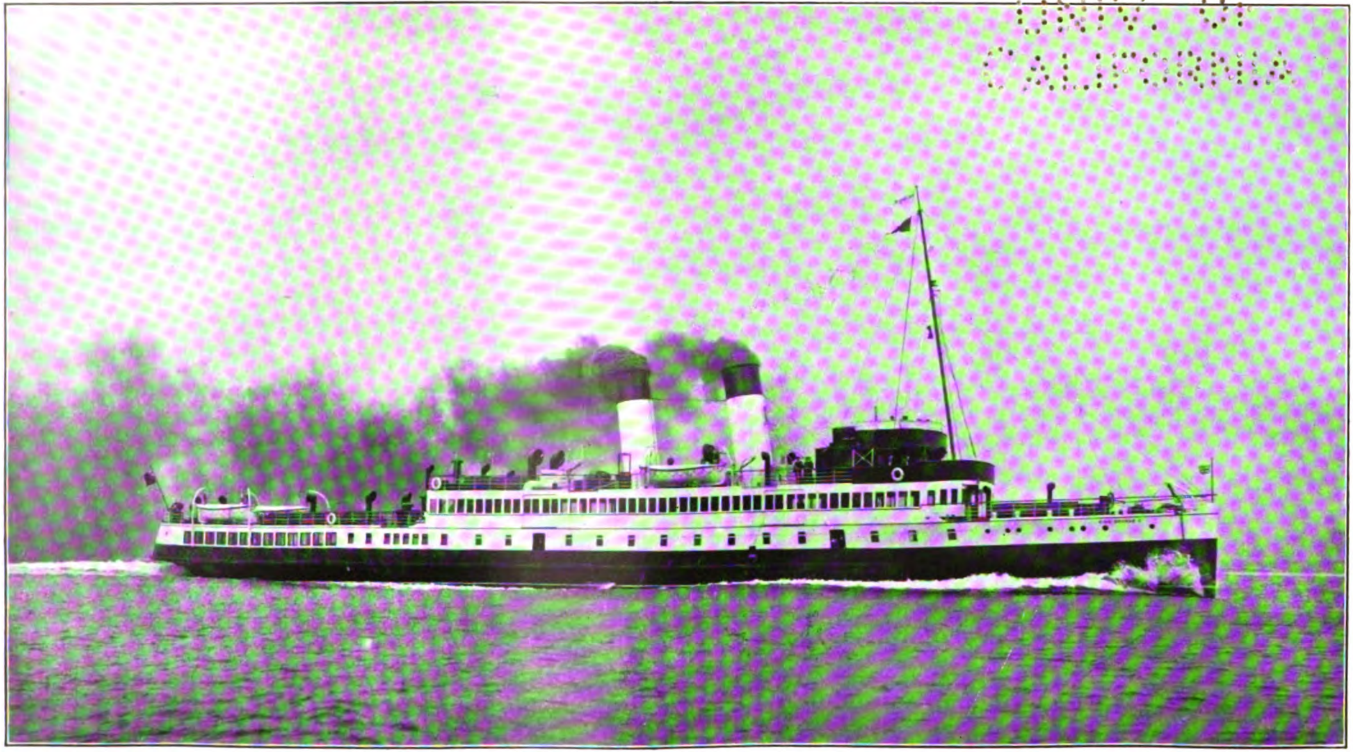
	Divisions of tonnage.	(1) Divisions of age—the World.				Total (all ages).	
		20 and under 25 years.		25 years and over.			
		No.	Tons.	No.	Tons.	No.	Tons.
World Total.	100 & under 500	1,403	311,631	3,604	784,406	11,695	2,707,015
	500 „ 1,000	301	216,594	1,035	753,478	3,105	2,285,273
	1,000 „ 2,000	488	710,046	1,089	1,565,455	3,892	5,670,270
	2,000 „ 4,000	557	1,696,483	1,045	3,021,177	4,212	12,255,653
	4,000 „ 6,000	385	1,808,204	346	1,651,808	3,568	18,008,377
	6,000 „ 8,000	122	817,136	86	576,744	1,756	11,974,999
	8,000 „ 10,000	46	405,343	16	143,151	496	4,346,913
	10,000 „ 15,000	13	154,922	25	288,311	253	3,019,952
	15,000 „ 20,000	8	140,763	—	—	72	1,218,127
	20,000 and above	5	115,956	1	21,179	43	1,185,358
	Total .	3,328	6,377,078	7,247	8,805,712	29,092	62,671,937

	Divisions of tonnage.	(2) Divisions of age—British.				Total (all ages).	
		20 and under 25 years.		25 years and over.			
		No.	Tons.	No.	Tons.	No.	Tons.
Britain and Ireland.	100 & under 500	476	108,164	1,033	210,049	3,496	821,399
	500 „ 1,000	76	52,073	159	114,992	720	518,927
	1,000 „ 2,000	92	134,379	121	172,246	791	1,164,557
	2,000 „ 4,000	158	488,495	127	404,752	872	2,659,683
	4,000 „ 6,000	119	553,000	62	299,414	1,185	5,916,920
	6,000 „ 8,000	29	197,013	34	231,570	520	3,603,751
	8,000 „ 10,000	25	217,326	8	71,522	177	1,547,701
	10,000 „ 15,000	9	107,338	13	150,604	132	1,566,019
	15,000 „ 20,000	3	54,994	—	—	46	782,197
	20,000 and above	4	94,812	1	21,179	25	682,631
	Total . .	991	2,007,594	1,558	1,676,328	7,964	19,263,785

There are 3,332 vessels in the world less than five years old, with a tonnage representing just under 16·6 per cent. of the total tonnage in existence. Vessels of 25 years and over amount to 7,247, but their tonnage is only 14 per cent. of the total. Of the vessels built in 1901 or before, nearly 51 per cent. are of less than 1,000 tons each and the average size of the others is 4,036 tons, while of the vessels built during the last five years 35·7 per cent. are of less than 1,000 tons each and the average of the others reaches 4,632 tons. Of the 864 vessels of 8,000 tons and upwards now in existence, 264 have been built during the last five years. Of the tonnage owned in Great Britain and Ireland 23·6 per cent. is less than five years old. The Merchant Navies which have the largest proportion of tonnage less than five years old are as follows: Germany 39·9 per cent., Holland 23·9 per cent., Norway 20·9 per cent., and France 20·2 per cent.

The group of vessels with the largest aggregate of tonnage is that of between 4,000 and 6,000 tons each amounting to 18,008,377 tons, equal to 28·7 per cent. of the world's total steam and motor tonnage; of this amount nearly 36 per cent. is under the British flag; further as regards the big liners, those of 15,000 tons each and upwards, their tonnage only represents $3\frac{5}{6}$ per cent. of the total tonnage.

THE EDITORS.



HIGH-PRESSURE TURBINE STEAMER KING GEORGE V.

(Built by William Denny & Brothers; turbines and single reduction gearing by the Parsons Marine Steam Turbine Co., Ltd.; water-tube boilers by Yarrow & Co., Ltd.)

[*See pages* 185 *and* 172.

CHAPTER XIV.

High Steam-Pressure Turbines.

In 1897 the Turbinia, a small vessel of about 100 feet length, flashed on an astonished crowd at Spithead, roaring along at 35 knots. She was the result of the genius and the technical skill of Sir Charles Parsons and of the financial foresight and courage of himself and some of his friends. Such a remarkable change in the type of the propelling machinery from a reciprocating to a rotary engine, with its great increase in revolutions, was one which took time to accustom itself to the practical life of a seagoing ship. The reciprocating engine had been the only type of machine in use for transmitting the energy of the steam produced in the boiler to that required for the propulsion of a ship. This engine had been developed through the stages of one, two, three and four expansions in two, three, and four crank engines during the previous fifty years, and had become a reliable and comparatively economical machine. Improvements in metals and their manufacture and increase of boiler pressures from round about 10 lbs. per square inch to 200 lbs. had reduced the consumption of coal per i.h.p. per hour from round about 5 lbs. to 1½ lbs. The design and construction of these machines had steadily and continuously improved until it may be said that they were perfected and absolutely reliable for all the fast and slow ships, and all the hard services of the sea. The scrapping of all this accumulated experience and the beginning again on a new type of machine was not a thing to be lightly or quickly undertaken. The infantile troubles of the new type, with their possible serious risks, had to be faced and overcome before the advantages of the new machine could be realized and its reliability established.

The "Viper" of the Royal Navy and the "King Edward" of the Mercantile Marine led the way, and within ten years most of the ships of H.M. Navy and the largest liners were fitted with turbines, the former having water-tube and the latter fire-tube boilers. These changes were accompanied with but small, if any, increases in boiler pressures.

Introduction of Gearing.

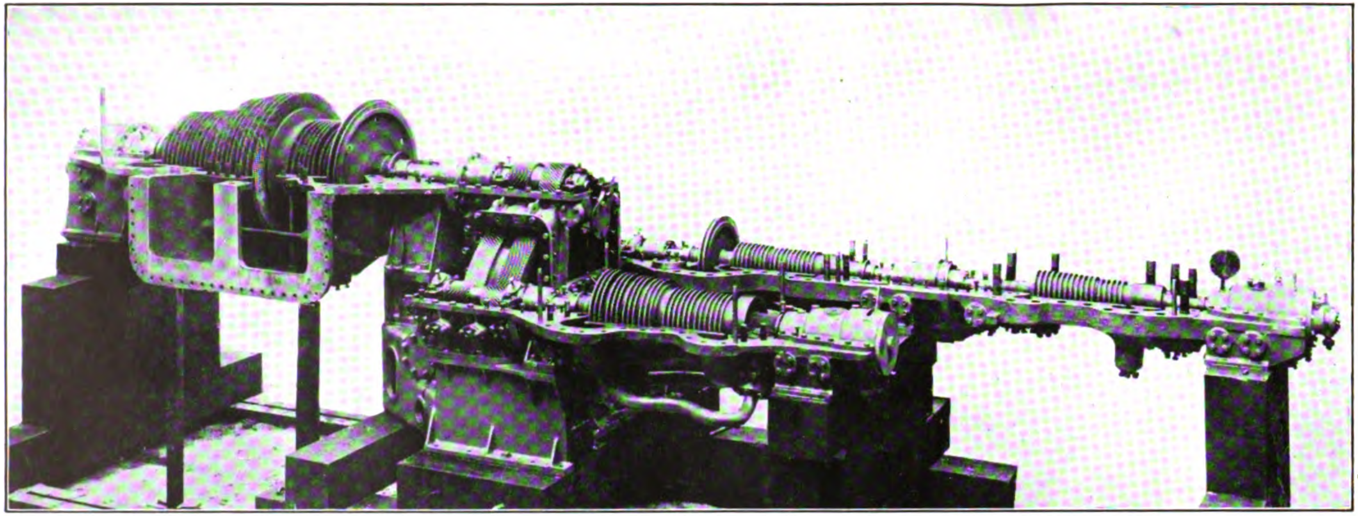
The field of cargo steamers had not been invaded by the turbine up to as late as 1910, as the turbines had been coupled direct to the propeller shaft. The turbine had to be a fast-running engine to attain high efficiency, and the propeller had to run much more slowly to attain the same end, and as these two could only run at the same speed, when the one was directly coupled to the other the

resulting efficiency of each was sacrificed by the compromise that had to be effected. In the case of the cargo vessel of full form and slow speed, the sacrifice on the side of each was too great to admit of an economical result. The difficulty was surmounted by the introduction by Sir Charles Parsons of reduction gearing, whereby the turbine was enabled to run at as high a speed of revolution as was desired and the propeller shaft was geared down to a speed which was best suited to its efficiency. The turbine became applicable by these means to the slow cargo vessel. The application of gearing—at first made in cargo steamers in the case of an experimental cargo vessel, the Vespasian—soon became general to other classes of vessel, and increased economy followed. The L. & S. W. Railway Company were the first to get geared turbine vessels running, and though these ships were completed in 1912 they have run very satisfactorily ever since, and seem likely to continue their high efficiency for many years to come. So great was the gain in these vessels over the immediately preceding direct-driven turbine vessels of this fleet that the coal consumption per shaft-horse-power-hour was reduced by over 20 per cent. A further advantage of the gearing is that the economical efficiency of the engine was maintained over a wider range of variation of speed and power, whereas in the direct-coupled machine the efficiency fell off very rapidly when the speed fell below the maximum.

When the Great War broke out the steam turbine had become fully established as the propelling instrument for all high-speed work and threatened to displace the reciprocating engine for all speeds. When the war was over the new passenger vessels laid down followed the pre-war intended and actual practice, and commercial results represented by 1·25 lbs. of coal per s.h.p., which is equivalent to 1·12 lbs. coal per i.h.p. hour, were expected and obtained, and results with oil-fired boilers represented by about 0·8 lb. of oil per s.h.p. hour were also obtained.

The Internal Combustion Engine as a Competitor.

But during the years subsequent to the War cargo vessels were being fitted with internal combustion engines whose consumption of oil per h.p. hour has been proved to be round about one-half that of the oil-fired steam turbine. This engine is of the reciprocating type, and is as economical for the ranges of power suitable to cargo steamers as it is for higher powers, while the turbines have a higher efficiency generally in large installations than in small. The internal-combustion engines had outstripped the turbines in thermal efficiency, and were threatening to displace them on account of their higher commercial efficiency, consequent on their superior thermal efficiency. Sir Charles Parsons saw that to meet this challenge something had to be done to improve the thermal efficiency of the steam turbine. It was very much cheaper in first cost than the internal combustion engine, and its mechanical advantages over the reciprocating engine had been fully established. If its thermal efficiency could be so much improved that its commercial efficiency



HIGH-PRESSURE GEARED TURBINE INSTALLATION OF THE KING GEORGE V.

(Boiler pressure, 550 lbs. per sq. in.) ***Constructed by the Parsons Marine Steam Turbine Co., Ltd., Wallsend-on-Tyne.)***

would be second to none, it would continue to hold its position with all its inherent advantages. He had in July, 1924, already designed and nearly completed a land installation for an electric power station, in which, with boilers working at 600 lbs. pressure and with steam superheated to 750° F. and developing 70,000 s.h.p., he had undertaken to produce a thermal efficiency not much less than that of the internal combustion engines. Could a corresponding high performance be attained in a ship? In 1925, in a pamphlet issued by the Parsons Co., the lines upon which they believed this could be done were indicated.

THE DIFFICULTIES OF HIGH STEAM PRESSURES.

They proposed to use steam of 500 lbs. pressure superheated to 700° F. They proposed to heat the feed water to 200° F. by means of the auxiliary exhaust, and to heat it still further to 310° F. by means of steam "bled" from the turbines. To produce such high-pressure steam, water-tube boilers were necessary. Such boilers had been used already on land for such higher pressures; the question was, could they be used at sea? Two main objections were raised to the use of such high pressures in water-tube boilers at sea. The first was stated to be that all boilers at sea were liable to get salt water into them through leaky condenser tubes, and that in consequence priming was likely to take place, and the boilers would then give off water as well as steam. In water-tube boilers the amount of water is relatively small, and if priming occurs a shortage of water and salting up of the superheater tubes may result and damage may ensue. Leaky condenser tubes have been not uncommon, and unless these can be avoided there will be such trouble. To meet this alleged objection three remedies were available: first, a superior metal for the tubes and a better design of condenser to eliminate the erosion of the tubes; second, a method of rapid detection of salt in the condensate; and third, a dividing of the condenser so that on detection of salt in the condenser water that part of the condenser from which the detected salt water was coming could be shut off and repaired without seriously interfering with the running of the engines.

The second objection is the difficulty of making and keeping the steam joints tight in a structure as elastic as a ship.

THE "KING GEORGE V."

The Parsons Marine Steam Turbine Co. have faced, and are confident of having overcome, these difficulties, and, with Messrs. Denny, of Dumbarton, and Turbine Steamers, Ltd., have produced the "King George V." These same people, twenty-five years ago, built the "King Edward," the first mercantile steam turbine vessel. The "King George V." has been running successfully on the Clyde since September 7, 1926, and no doubt fully detailed figures will be given to the Engineering World at an early date on a suitable occasion.

Apart from the higher thermal efficiency of the high-pressure turbines, they have with their water-tube boilers a decided advantage in respect of weight over the lower-pressured turbines and Scotch boilers. The machinery weight of a 22,000-s.h.p. turbine installation for an ocean liner built after the war was about 3,650 tons. For this weight, with the new high-efficiency system, a shaft-horse-power of 44,000 could be obtained, which is only one-half the weight per h.p.

The "King George V." marks an epoch in steam engineering which will be associated with Sir Charles Parsons and those with whom he has been working, and may be considered as the third great step in advance in the development of the marine steam turbine. If it is desired to have much higher powers, these can be obtained for less weight per h.p. This comes about so far as the turbines are concerned on account of the fact that the larger the turbine the higher is its thermal efficiency.

Hence the prospect for this high-pressure turbine seems to be bright, especially in the field of larger installations. The experiment in the "King George V." was made not only with a view to proving that the high pressure is more efficient, but principally to show that the high pressures are quite practicable in a seagoing ship. Having established this on the scale of "King George V.," which is for a 3,750 h.p., it is now practicable to go ahead on larger installations and reap the fuller benefits which these higher powers will give.

Perhaps one direction in which a rapid development may take place is in high-speed Atlantic steamers and in warships of all classes, as in the latter case not only will the speed be increased but the radius of action also. The significance of the whole project will be apparent to many and will explain the great interest which has been taken in this direction.

JOHN H. BILES.

CHAPTER XV.

Some Aspects of British Shipping—1926.

Of the numerous problems which agitate the mind of the British shipowner none presses more constantly on his attention than the size and type of his new vessels. There are in the world to-day far more vessels than the total volume of trade can justify, but ship after ship is being worn out and sooner or later we shall have to renew our fleets. When we order new ships we shall have to decide on steam or internal combustion engines, each according to his own taste and the nature and geography of his traffic, and we shall have to ask for larger ships if they are commercially necessary. No general rule can be laid down for all the various classes of trade for which the shipowner has to provide, although, on the whole, it is true to say that the relative cheapness of operating large units combined with an expansion in the scale of all operations has had its effect on the size of ships. This upward tendency is, however, limited, primarily by the fact that ships of more than a certain size present constructional difficulties ; and only certain trades can provide—

(*a*) The cargo or passengers to fill enormous ships.
(*b*) The port facilities to berth them, and
(*c*) The requisite sea room and depth of water in which to manœuvre and to enable them to take the shortest—or even nearly the shortest—route.

The Atlantic trade has always tended to fulfil these conditions, and there have been in addition on that route matters of prestige and an abounding supply of rich men who like a floating hotel and are ready to pay for high speed, so that it has been the most spectacular of all the routes. In other trades at least as important, draft of water has been a limitation ; for instance, the size of vessels going to Australia and the East has been affected by the depth of water in the Suez Canal, and to South America by the soundings in the river Plate. Moreover, where passengers are concerned population is seldom so distributed as to require that combination of a relatively short voyage (so that a frequent service can be maintained with a few ships) and a large, fairly constant flow of passengers and goods, which favours fleets of big tonnage concentrated in a small number of vessels. These considerations apply equally *mutatis mutandis* to purely cargo Liners.

The Problem of the Tramp Ship.

The problem for Tramps is, however, less restricted. Here too, the average size of ship has grown with the average size of cargo,

but class of vessel, one of whose chief functions is to meet the requirements of the seasonal fluctuations of trade with which liner services are not elastic enough to cope, and to be ready to supply any new or unexpected demand for tonnage in any part of the globe, cannot be confined to one type or size, if it is to fulfil its requirements efficiently. Size, therefore, becomes much more a question for the individual Tramp owner. He may either—

(*a*) Aim at catering for every kind of demand, where and whenever arising; in this case, he will probably have a fleet of anything from 4,000 to, at present, a maximum of about 11,000 tons deadweight of widely different types, and concentrate his skill on having the right ship in the right place at the right time; or

(*b*) Concentrate on some particular trade or combination of trades, taking the rough with the smooth, with the intention of, on the whole, sticking to the round he knows. In this case, his problem is more nearly that of the liner, and he will tend to compromise on a size and type that best satisfy the requirements of his intended voyages.

The Coasting trade is a separate problem of a highly specialized nature, but even in this trade the tendency is to run the largest vessel that the volume of traffic can justify. And the standard for measuring all these considerations is, and ought to be, the Profit and Loss Account.

The Function of Profits.

Without profits, there would not be drawn into the shipping industry two essential elements: the fertile minds of the most intelligent men and the accumulated resources which we call capital. Larger and larger contributions are made year by year to the capital available for the provision of new ships by an ever-widening circle of shareholders, large and small. There are many patent dangers in complicated finance, but, on the whole, it may be said that the immense increase in the numbers of investors in shipping companies has been better for the British Empire than would have been the reservation of actual ownership to a small number of owners, some dynastic and some the direct creation of their own remarkable character and ability. Shares are held in every town and hamlet, and the amount of the savings of the people which finds its way into shipping in the course of the year depends on whether or not profits can be made. Without profits in shipping, savings available for investment in it will go elsewhere. The growth of British shipping is absolutely dependent either on capital brought in from outside or on undistributed earnings, reserves kept back from freights being used for the purchase of new vessels rather than for the payment of dividends. If there are losses instead of profits, there can no more be internal resources available for the maintenance of vessels or for the increase in their number than there can be the necessary magnet for the attraction of liquid capital. Too many controversialists devote themselves to criticism of the business man's respect, or

(From a drawing by Arthur J. W. Burgess.)

DONALDSON LINE REFRIGERATED MOTORSHIP MODAVIA.

(Building by Vickers Ltd., Barrow-in-Furness.)

[See page 185.

appetite, for profits and to the way in which they are, or ought to be, distributed, forgetting that losses are a danger not only to investors but to technical staffs ashore and afloat, to captains, officers, engineers, sailors and firemen, and the multitudes who depend on and cluster round the shipbuilding and engineering yards. Losses are, unfortunately, more often the rule than profits in shipping concerns to-day. There is no exaggeration in the statement that there are not ten important British cargo shipping fleets which have earned their working expenses and depreciation and five per cent. per annum on their capital from their current freights during the past four years. Had it not been for resources accumulated during and immediately after the war, they could not have continued to ply in either near or distant waters.

The State as Shipowner.

Would State enterprise have succeeded? It could only have turned those losses into profits by cutting down expenditure, which is mainly under the heads of new construction, repairs, fuel and wages. As to these items, I may remark that to give to the shipyards less than they receive at the present level of prices would mean throwing the losses on to the shipyard men—an impracticable policy for any State department or government. To spend less on repairs would lead to the more rapid deterioration of existing ships. To spend less on fuel would mean slower speed or less money for the mining men. To reduce wages by a State department decree is beyond their courage. There remains only the cost of management, which is a very small percentage of working costs and, as far as can be learnt from State experiments, is not likely to be cheaper or better if management is the function of civil servants rather than of privately controlled and selected organizations. The experience of the war taught us a great deal about the courtesy and sense of duty of permanent and temporary civil servants and their readiness to act under the guidance of skilful ship managers, who really made the Ministry of Shipping; but it did not teach us how to make working expenses and depreciation and maintain wages at their present level out of a freight of 15*s*. a ton to Buenos Ayres and home again at 12*s*. 9*d*.! That plain problem and a hundred more rather like it have to be solved to enable the shipping companies to keep themselves alive.

In general, State shipowning has in it inherently some latent or patent evils. As it exists at present it tends to be less influenced by the healthy elements of competition, and it is a disturbing element, subject more to political than to economic movements. For instance, while we recognize the efforts of many of those who control and direct State merchant fleets to act fairly to private shipowners, every observant person can see how difficult it is for State-owned enterprise, exposed to the claims of conflicting interests, to adhere to one policy, and there is an almost inevitable tendency towards flag discrimination where State shipping is concerned. It would be better for trade, as a whole, for those Governments which are engaged in commercial

undertakings to dispose of their tonnage as rapidly as possible, leaving the field of commerce open to the wholesome competition of free, equal and unaided enterprise.

"The Cheapest Carriage in the World."

British shipping serves nearly every industry in the country, certainly every manufacturing industry and every export trade. It provides the cheapest carriage in the world, and for its services it secures a toll on goods so small as to be scarcely perceptible in retail prices. It brings, in effect, our foreign markets and customers to our very gates. As to our food and raw materials, it may be said that our diet, which is the most varied in the world, is the direct outcome of cheap sea carriage and of the ingenuity and practical scientific skill of our naval architects, engineers, and chemists. No matter what arrangements are made to regulate supplies or to ensure to merchants and shipowners alike equable rates of freights, the latter are always subject to the influence of world competition—a healthy influence which is the very life blood of efficiency, conferring benefits alike on producers and consumers.

The effect of British shipping on the life of the British people does not end with low freights and safe and frequent voyages. It plays a part in the payments to foreign merchants and growers without which we should be unable to buy from abroad the essential foods by which life and comfort are maintained.

Shipping and the Trade Balance.

In making up the accounts of national wealth statisticians year by year attempt to produce more or less accurate statements of the balance of trade. Every year we import into this country far more food and raw materials and manufactured articles than can be paid for by our actual visible exports of coal, manufactures, and other merchandise. Somehow or other the whole of our imports have to be paid for, and they are, in fact, paid for by goods and services. New ships built for export are included in the Board of Trade returns. The shipping industry contributes a little each year by the sale of second-hand ships to foreign shipowners, and this item, which is not shown separately in Board of Trade returns, goes to enlarge the figures of exported manufactured articles, but the main contribution of shipping is measured in services. How great these are no one can say to within a million or so, but the best authorities agree that roughly in 1925 the gross earnings of shipping were 138 millions. When all the necessary deductions have been made, the approximate figure appearing in the accounts of the balance of trade would be somewhere in the region of 115 millions. It is obvious that without this great addition on the export side of the national balance sheet, we should be unable to pay for part of our imports, or to put it more accurately, part of what we are now importing would never come to these shores unless British shipping were able by its services to the world to help to place the rest of the world in our debt.

What the rest of the world sells to us we pay for, in fact, by carrying a large part of the world's trade in British vessels plying to and from the ports of other countries. If we are to make payments abroad, British shipping must be performing these services abroad.

On every ground, whether for the support of life here or for the provision of payments abroad, by which we can buy what is necessary for our households and our factories, the services of British shipping are of prime importance. They are, if not the keystone to the arch, at all events such an important part of it as to justify us in saying that the balance of trade could not be upheld at its present high figure without the earnings of shipping at something like their present size. Indeed, we should be short of food and raw materials and many necessary manufactured articles, which at present we must buy from abroad, if our civilization is to be kept up to the present level, and our comforts and supplies are not to be restricted, unless freights are earned in every port of the world by vessels which ply in the international trades. The importance of this economic fact is greater in the life of this country than in that of Europe, America, or Asia. It is our foreign trade, as a whole, which enables us to support 46 millions of people in Great Britain; without our foreign trade it is doubtful if the country could support 20 millions. In provision for payment, which in itself is the first condition of foreign trade, shipping plays a greater part than does almost any other single industry.

An International Organization.

I draw several lessons from this which ought to be part of common knowledge, and should certainly be ever present in the minds of Ministers and public men, whether they are in the House of Commons or in commercial offices or at the headquarters of Trades Unions.

The first is that an industry which is so vital to national well-being should be respected. It should not be lightly used for polemical acrobatics.

Second: Whatever may be said in criticism of the capitalist system elsewhere, it is clear that this gigantic engine for international service and for the payment of British supplies is the direct outcome of enterprise, in which capital and profits played a potent part. The State has never created a single item of foreign trade; it has never organized a single foreign service. The State's relations to shipping have been those of regulation and restriction, which, in the main, have been good and supported by the industry, although sometimes merely irritating, expensive and in no respect beneficial. What has been done by the State for the protection of human life is welcomed by every sane man, and all that we ask is that legal provisions for the greater safety of men afloat should be of universal application and that international organizations, like the League of Nations, should devote themselves to raising the standards to the level of the highest, and to make them of world-wide application.

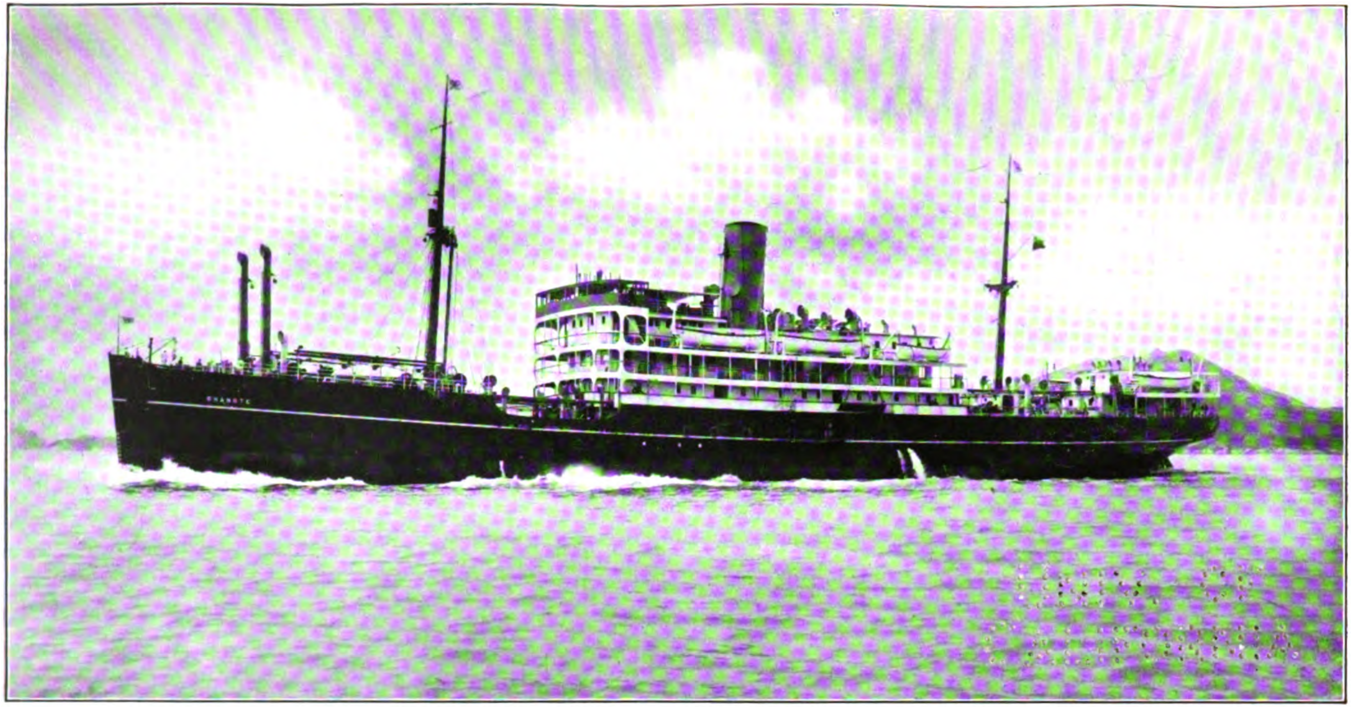
Third: Tampering with the delicate adjustments of international trade produces bad results more quickly in shipping than in any other industry, and experiments in State administration can only be made at grave risk, not to the shipping community alone, but to all the millions who depend on foreign trade directly or indirectly for their livelihood.

Fourth: Whatever may be thought of the possibility of State ownership and organization of manufacturing and mining industries, no sane man has yet suggested that British shipping employed in foreign trades could be run as a State concern. The experiences of the United States of America, Australia, and Canada all goes to show that in international trade, State departments and the subsidiaries of State departments—and no matter how well they are manned—are incapable of keeping their financial heads above water in the fresh breezes of international competition. The United States lose many millions of dollars in the year on their huge merchant fleet built in wartime, and now in gradual process of transfer to private concerns. The Government of the Commonwealth of Australia have endeavoured to sell out of, or reduce the extent of, their State enterprises, for the loss on them is heavier than can be borne. Canada has had a similar experience and has learned that State enterprise in shipping leads not to profit but to loss. Now if British shipping were to produce a net loss year after year it could not continue, and it would fail to do its share of payment into the category of invisible exports for foreign food and materials and goods, which we require to keep life and comfort secure. It is only if, in the main, it makes its profits that it can continue to contribute to the payments abroad, which is the first condition to be fulfilled in the markets of the world in the process of feeding and supplying our people.

Invisible Exports and Socialism.

Amongst invisible exports are found not only the net national shipping income, but also the net income from overseas investments. On this let it be observed that, if private property is to disappear, there can be no such thing as investments held by individual British citizens. Overseas investments could hardly fail to disappear with the capitalist, yet the overseas investments of individual capitalists in this country provide a net income abroad of roughly £250,000,000 per annum. To wipe out the capitalist would, therefore, almost certainly mean that our people would have to go short of food or raw materials, which they now buy to the extent of at least £250,000,000 per annum.

Another item of invisible exports is described by the Board of Trade as commissions. Commissions are the earnings of the merchant and broker class. There are thoughtless people in every class of society who think that the middleman and broker are parasites. The middlemen and the brokers provide the mechanism by which those people who suffer from scarcity can be assured of the surplus supplies available for them elsewhere, and brokers and



AUSTRALIAN-ORIENTAL LINE'S PASSENGER AND CARGO STEAMER CHANGTE.
(Built and engined by the Hong Kong and Whampoa Dock Co.)

[*See page* 189.

merchants, alike, are not only the intelligence officers of the commercial and industrial world, but are even the authors and architects of great commercial expeditions and enterprises. Apart from their virtues, they provide each year through commissions, etc., overseas, some £40,000,000 of invisible exports for services rendered abroad. If that item were wiped out, Great Britain would go short by £40,000,000 of what she needs.

There are some other odds and ends which bring the total of invisible exports up to £429,000,000. State Socialism would extinguish this vast sum. For in principle and by declared aim, Socialists would do away with the private investor, the commission broker and the merchant, and we know from dearly bought experience that the net shipping income would vanish under the withering blast of Government ownership and administration.

One remarkable fact emerges from this brief summary of the national balance sheet, and that is that the cost of the food from abroad which sustained our people last year came to £572,000,000. This is not very greatly in excess of £429,000,000, the figure of our invisible exports.

The Virtue of Capitalism.

Wipe out these invisible exports, which are a direct product of the capitalist system, and our people as a whole would at once be cut off from the supplies which now flow into their granaries and warehouses, stores and shops, from Asia, Africa, Australia and America. They would no longer be able to buy the grain which is grown on the plains of North America or of Argentina or of Victoria and New South Wales. They would no longer be able to feed their children on the rice of Rangoon or on the foods that are based on maize and beans and nuts and oils. They could no longer secure their cheap meat from Buenos Ayres and Wellington, Sydney and Chicago, or vary their diet with the fruits of the Antipodes or of the West Indies or of the tropical islands. Provision for payment for this world-wide fare is found by the shipping industry, the middlemen, and the investors year by year. Wipe their services out and either half our people must starve, or the whole go on half rations and bid farewell to some of the varied produce of the earth which has brightened the tables of every class of the community. By the nature of things, British shipping is indispensable to the well-being of Britain, and to tamper with the foundations on which our international industry and commerce have been built would not only destroy the prosperity of the hundreds and thousands of investors who now own British shipping, and of the managers and staffs who direct its course and the seafaring men who navigate the sea, but would cripple our national resources so cruelly and with such fatal results that 46 millions of people could not be maintained in this country after the loss of the greatest and most characteristic of British industries.

Walter Runciman.

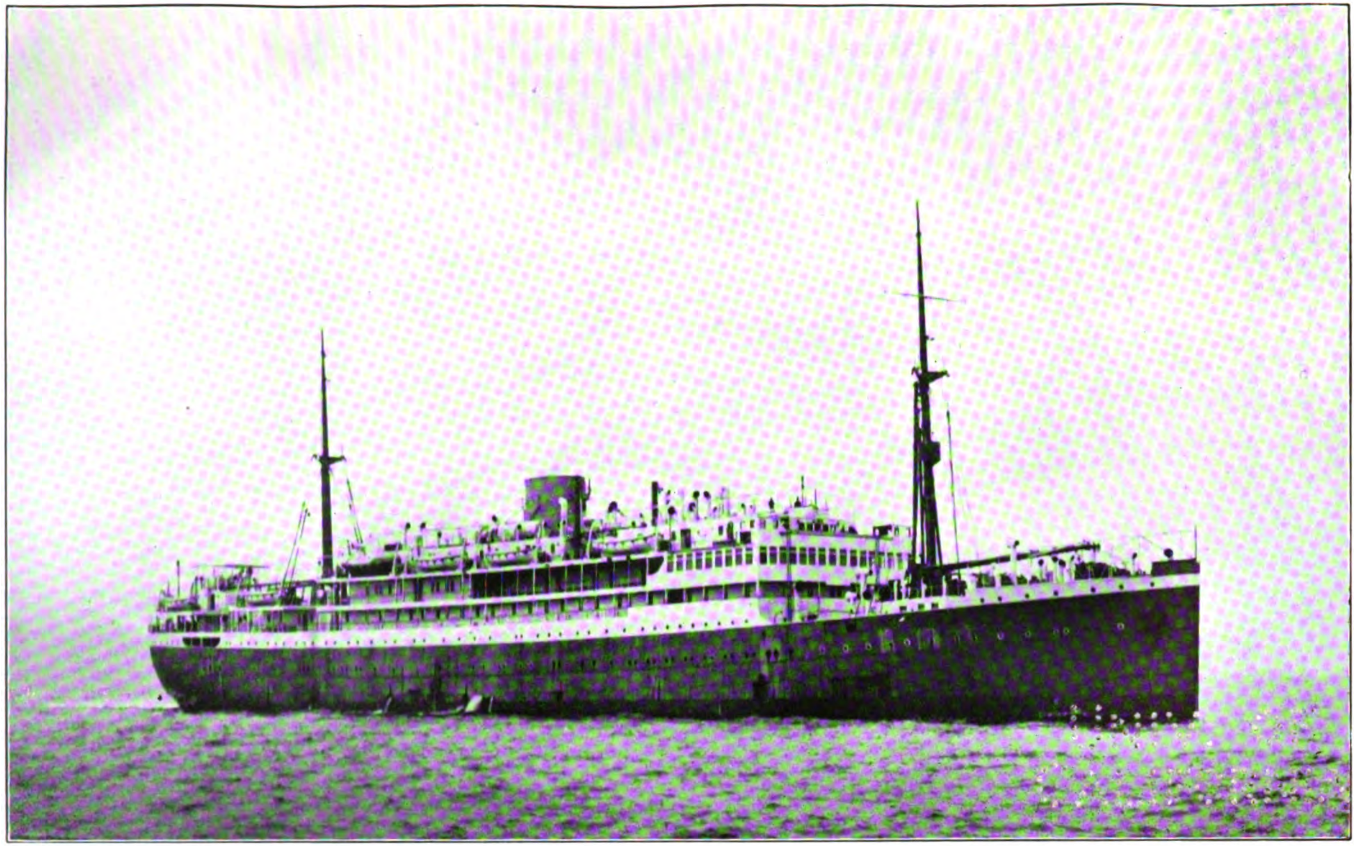
CHAPTER XVI.

The Passenger Ship as Cargo Carrier.

It is one of the characteristics of man that in a world of complexities, bristling with irregularities and full of inconsistencies, he should seek to encompass his knowledge within the narrowest of confines and reduce life to its elements. Hence, this presumably is why sermons and other things, like ancient Gaul, are divided into three parts, and ships are, by general consent, split into three types, passenger, intermediate and cargo, squared by the common definition of a passenger ship as one wholly confined to the carriage of human freight, by the intermediate as a sort of half and half of passengers and freight, and the cargo ship just plainly and simply what its term indicates. When, however, one comes to analyse the ships as turned out from year to year, it becomes at once evident that the tripartite subdivision breaks down, and the popular conception that a large passenger ship concerns itself purely with passengers is shown to be just as erroneous as the too prevalent idea that a liner cannot be a cargo-ship first and last. For, if we except passenger ferries, the small pleasure craft which ply on our rivers and estuaries, and a few odd ships which need not be specified, it is impossible to find in the mercantile marine any ships which do not provide cargo space.

Some may be inclined to demur to this and suggest that, for example, the fast cross-channel boats between Dover and Calais are entirely devoted to the carriage of passengers. But such an assumption is wrong. Every one who has made the journey knows how much time is occupied by the loading and unloading of baggage in considerable quantities, and if one looks into the holds one can see motor cars and other material of considerable bulk. These provide freight for which payment has been made and is, therefore, a source of revenue quite apart from the coming and going of the travellers. It is a business by no means discouraged and so, even in what appears to be exclusively a passenger-carrying ship, we find the vessel structurally adapted to take the cargoes peculiar to the service and also the terminals specially equipped with loading and discharging appliances for dealing rapidly with the miscellany of trunks and packages.

When we come to rather longer sea routes, these same cross-channel types develop more and more into the mixed or intermediate variety. This is particularly the case on the Irish Sea, where loading operations are conducted during the day and the voyages made during the night, the embarcation and disembarcation of passengers forming but a small part of the ship's routine. On these vessels



ELDER DEMPSTER PASSENGER MOTOR LINER ACCRA.
(*Built and engined by Harland and Wolff, Ltd.*)

[*See page* 187.

there is also provision for the carriage of cattle; and any one who first visits, say, the Donegal Quay at Belfast a few hours before the long line of ships are due to leave for various English and Scottish ports, will be amazed at the flocks and herds ready for shipment. Thus does the fast cross-channel steamer quickly merge into a cargo carrier.

Problems of Design.

The fact is of course that every inch of space contained by the hull of a ship must be made to pay, and the designer must use all his wits to see that once the machinery space has been allotted there are no odd pockets which contribute nothing to the running of a vessel. No better illustration of the difficulties which confront the shipowner can be found than the problem which faced the directors of the Cunard Steam Ship Co., when it became necessary to introduce into their fleet a third ship to run in conjunction with the Mauretania and Lusitania. In the case of these two express Cunarders the company was in the position of receiving from the Government an annual subsidy of £150,000, or something like £5,000 each voyage. But the next ship—subsequently named Aquitania—would have to run without subsidy; that is, she would have to be an entirely self-supporting commercial proposition. It was decided that the minimum speed at which she could be run in station with the other two would be 23 knots, and although the saving in expense would be considerable through the reduction from 25 knots, the additional space available for passengers or cargo would not achieve the object at which the directors were aiming. In addition to this, a ship of the same dimensions as the Mauretania, but slower, would not be so attractive to passengers. Hence, the company would not be able to obtain the same rates of passage money.

The Mauretania is about 800 feet long, and so the directors worked on tentative plans for a ship 850 feet long. It was found that, in order to get in the requisite number of passengers and volume of cargo, seven living decks would be required. This created a height of structure which called for a minimum beam of 92 feet—a width which was larger than any dock entrance at Liverpool, which at the time was the terminal port of the big Cunarders. The beam difficulty was overcome by the Dock Board providing a new dock, and the next tentative plans provided for a ship 885 feet long and 95 feet beam. As a result, however, of tank experiments at Clydebank, it was found possible to increase the length by another 15 feet and thereby give a better distribution of the passenger accommodation. So, instead of a ship of the size of the Mauretania they built the Aquitania, and the differences are best set out in the table on p. 164.

These figures are to-day subject to some modification, especially in regard to the numbers of passengers and crew, through the changes in travelling facilities on the one hand and in manning through the conversion from coal to oil fuel.

	Mauretania.	Aquitania.
Length overall	790 ft. 0 ins.	902 ft. 0 ins.
Breadth	88 ft. 0 ins.	96 ft. 0 ins.
Depth	60 ft. 6 ins.	64 ft. 6 ins.
Displacement	44,640 tons	49,430 tons.
Gross tonnage	30,695 tons	45,647 tons.
Net "	12,678 tons	21,466 tons.
Deadweight tonnage	10,390 tons	11,280 tons.
Draught	36 ft.	36 ft.
Passengers—		
1st class	560	660
2nd class	475	698
3rd class	1300	1900
Officers and crew	812	972
Total passengers and crew	3147	4230

Changed Conditions.

From this it will be seen that the design of a passenger liner is largely a matter of compromise. There are certain trades, such as those on the North and South Atlantic, which cater for a very high standard of luxury on board ship. For these the best parts of the vessel are necessarily reserved for those passengers who are prepared to pay for the space provided for their supposed requirements and the decorative features and superior service which are the natural corollary to such a standard of living. Next come the requirements of what one might term the ordinary traveller who is satisfied with moderate comfort in first or second class, and then we come to the third class. The last is as perplexing a problem as has ever faced a shipowner because, as on the North Atlantic, the volume of emigrant traffic is severely limited and the passage rates have to be correspondingly high on account of the fewer numbers carried. For this reason the third class traveller demands, and gets too, a higher standard of comfort. He is no longer satisfied with big spaces below decks where he must sleep cheek by jowl with some hundreds of his companions. The order of the day is for cabins accommodating 2, 4 or 6 persons only, and very material alterations have consequently been made to liners, particularly those trading between Europe and the United States.

After all the passengers have been provided for there is always, in a box-like structure such as a ship is, a residue of space which has to be put to profitable use. Some of it goes to provide the multifarious services in connection with the feeding and caring for a community of, it may be, nearly 4,000 souls. The balance, after providing for bunkering and ballast requirements, is used for cargo, and the extent of this space is easily seen from the deadweight and cubic capacity figures given on pp. 168 and 169, which have been compiled from Lloyd's Register and "The Directory of Shipowners, Shipbuilders, and Marine Engineers."

No attempt has been made to render this list exhaustive, but it is fairly representative of the passenger ships of the world generally.

It takes in some of the largest liners, and it also includes some of the smallest, covering a wide variety of trades and services. It shows that even on the largest ships the proportion of space available for the carriage of cargo is a very material one, and if the figures were corrected to cover seasonal requirements when some passenger accommodation is often dismantled in order to carry more cargo, the figures would be even more striking.

They do, however, show what a potential force the passenger ship can be on the freight market generally. It is true that where possible the faster ships endeavour to fill their cargo space with a high class of merchandise bearing freight rates commensurate with the facilities the shipowners provide in excess of the slower type of ocean carrier. There are times when they can do so. But, equally, there are occasions when they cannot, and the depression through which the shipping industry has been passing has shown how often a passenger liner will take a bulk cargo like grain comfortably within its bosom to the detriment of the smaller tramp or cargo liner. In recent years the extensive adoption of oil fuel has also set free for cargo considerably more space than that for which the ship was originally designed. This applies particularly to ships built up to about 1920.

There is not a very great deal of difference, when we omit the mammoth North American liners, between the ships on various routes. Here and there there is a shading down of the passenger list, and we eventually come to the ship which makes its prime business the carriage of cargo and the passengers take second place, not in point of service or catering, but in the eyes of the particular steamship line as dividend earners.

An American Analysis.

So far I have confined my subject to generalities and to matters which are common knowledge. Unfortunately, although one of the most important industries in this country, shipping is not provided with readily available statistics from which one can analyse the development of seaborne commerce, and it is necessary to work by a somewhat circuitous route through the labyrinth of official and semi-official returns. Thus the Liverpool Steam Ship Owners' Association has given in each annual report since the armistice the best estimate it could make of the volume of the inward and outward cargoes handled in the ports of this country, insisting that any records of progress must be judged by such volume figures rather than by the selling prices of the commodities dealt with, arguing that it is the food we import, and not the price we pay, upon which we live, and it is the volume of the manufactures and coal we export, and not the price we get, that provides employment. By reducing money values to bulk it is possible to show how far the carrying power of shipping has been utilized or wasted. This, however, does not show what proportion is carried in passenger ships.

An interesting attempt at an analysis of the carrying power

of different classes of shipping was recently made by Mr. E. T. Chamberlain, of the Transportation Division of the United States Department of Commerce. This analysis appeared in the official publication "Commerce Reports," at various times during 1926, and the results were summarized in a concluding article. Mr. Chamberlain considered that the best all-round criterion of what constituted liner tonnage was to take ships of 12 knots speed or more and of 5,000 tons gross and over. From these, however, he excluded oil tankers, and deduced the following figures:

Space and Proportion of Liners, Traders, and Tankers of 5,000 gross tons and over.

(In thousand tons of 100 cubic feet each.)

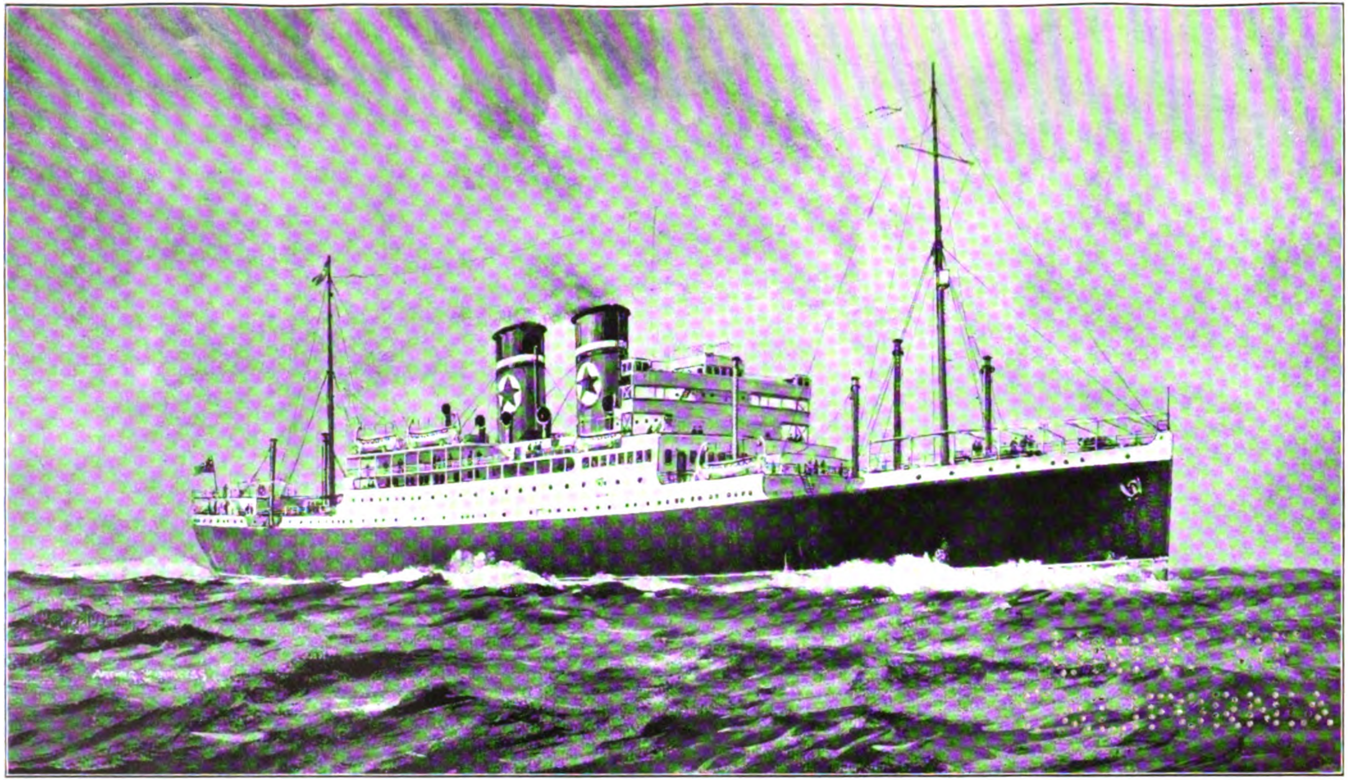
Class of steamer.	Number.	Gross tons.	Net tons.	Bales.	Net tons multiplied by speed.	Bales multiplied by speed.
Liners—						
Of 12 knots and over	1,469	12,882	7,703	6,140	109,285	82,484
Under 12 knots	1,340	7,973	5,145	5,796	51,450*	57,960*
Total	2,809	20,855	12,848	11,936	160,735	140,414
General traders	730	4,176	2,576	3,159	25,760*	31,590*
Tankers	606	4,135	2,688	—	26,880*	—
Grand total	4,145	29,166	18,112	15,095	213,375	172,034
Per cent. constituting general traders	18	14	14	21	12	18
Average per ship †	—	7,000	4,400	4,300	5,200	4,800

He then proceeded to analyse the overseas passenger trade, starting with the assumption that overseas passenger ships were vessels of over 5,000 gross tons and 12 knots or more. He found that the entire oversea movement into the United States in the fiscal year 1925 was 426,000 passengers; the immigrant movement into Canada in 1924 was 130,000; and the immigrant movement into Argentina during the same period was 191,000. The largest annual trans-Atlantic passenger list to the United States of late years, just before the immigration law of 1922 took effect, was 570,000. The passenger movement north to south through the Suez Canal was 134,000 during 1926. Overseas passengers arriving in Australia from all quarters in 1923 numbered 96,000, of which 85,000 were British, mostly *viâ* the Suez Canal. Passengers from the Atlantic to the Pacific through the Panama Canal in 1924 numbered 47,000.

Passenger Requirements Met.

Mr. Chamberlain believed the annual requirements of trans-oceanic and inter-oceanic travel would be supplied by accommodation for 1,350,000 passengers, nearly two-thirds immigrants. The space

* Reckoned at 10 knots speed. † In tons, 000 not being omitted.



(*From a drawing by Arthur J. W. Burgess.*)

BLUE STAR LINER ALMEDA.

(*Built and engined by Cammell, Laird & Co., Ltd., Birkenhead.*)

[*See page* 187.

available on the 1,469 ships in the above table would be able to cope with this traffic if the vessels made an average of four voyages a year. But some, like the large Cunard, White Star, French, and similar liners, make from twelve to fourteen. At this stage Mr. Chamberlain found it necessary to include a number of ships between 4,000 and 5,000 tons, embracing many ships wholly engaged in the shorter sea routes, such as those of the Mediterranean, and so he brought into his survey the following:

CONSOLIDATED TABLE SHOWING LINER ABSORPTION OF FOUR-FIFTHS OF OVERSEA TRADES.

(In thousand tons of 100 cubic feet each.)

Class of ship.	Number.	Gross tons.	Net tons.	Bales.	Net tons multiplied by speed.	Bales multiplied by speed.
Liners—						
Of 12 knots and over .	1,640	13,661	8,170	6,582	115,227	88,004
Under 12 knots . .	1,734	9,822	6,316	7,152	63,000*	71,520*
Total	3,374	23,483	14,486	13,734	178,387	159,524
General traders . . .	1,503	7,603	4,756	6,029	47,560*	60,290*
Tankers	696	4,567	2,969	—	29,000*	—
Grand total . .	5,573	35,653	22,211	19,763	255,637	219,814
Per cent. constituting general traders . .	27	21	22	30	19	27
Average per ship † . .	—	6,300	4,000	4,000	4,600	4,500

By a combination of speed and net tonnage figures Mr. Chamberlain found that the total speed multiplied by net tons was 255,637,000, of which liners of 12 knots and more provided 115,227,000, or 45 per cent. of the total, and on them falls the burden of the passenger business. The general traders or tramps gave 47,560,000, or less than 19 per cent.

This form of analysis may be open to various objections, such as not being conclusive, or as being too theoretical. There is probably much inter-state and inter-colonial traffic not included in his figures, such as that to and from the African Continent, and the large business done in Far Eastern ports, which, I believe, would more than absorb the surplus between the figures he quotes and his total of 1,350,000 before we touch the shorter sea routes. As an example it may be pointed out that 230,000 passengers travelled across the Irish Sea during the first half of 1926, 800,000 travelled between the United Kingdom and the Continent during the same period, and 22,000 to and from British South Africa. There is also that ever-growing and by no means negligible volume of tourist traffic of all kinds leading up to the luxury cruises, for which one may pay a minimum of £350 or £500. Nevertheless, even if the total of passengers is much higher, we know from experience that

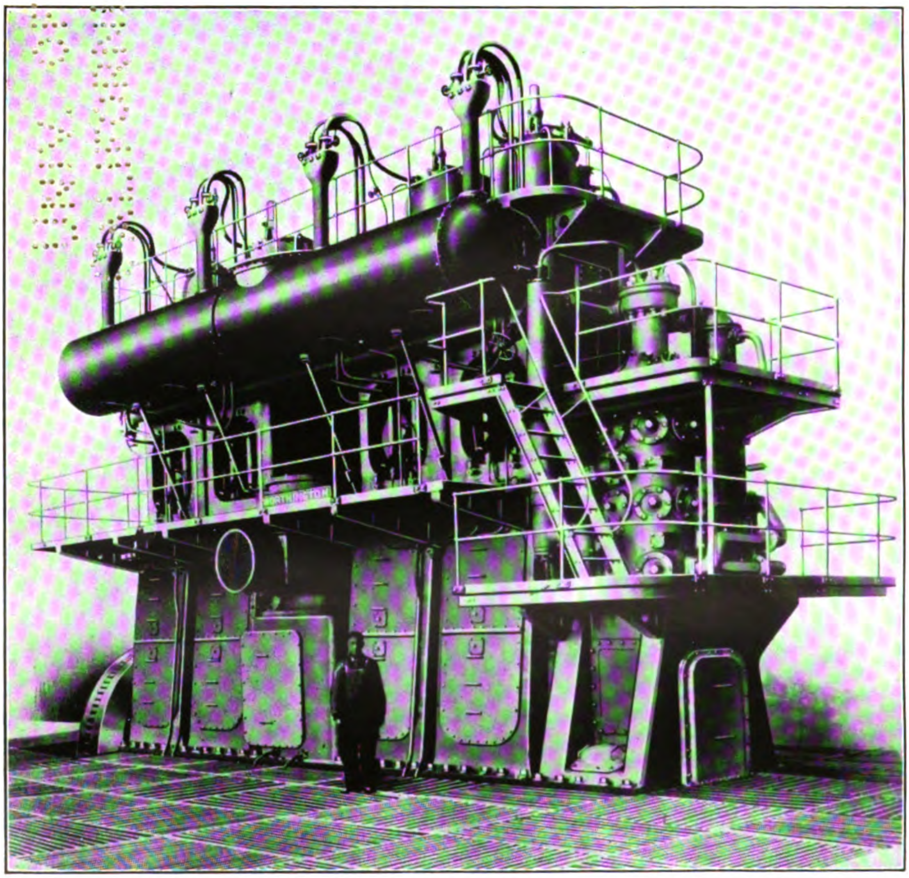
* Reckoned at 10 knots speed. † In tons, 000 not being omitted.

Name.	Owners.	Tonnage. Gross.	Tonnage. Net.	Dead-weight (cargo and bunkers).	Cubic capacity (cargo cu. ft.).	Total passengers.	Speed (knots).	Service.
Berengaria	Cunard Line	52,226	22,016	15,766	395,000	3,063	23½	Southampton—New York.
Aquitania	Cunard Line	45,647	21,466	11,495	190,000	2,620	24½	Southampton—New York.
Paris	French Line	34,568	15,333	10,704	146,000	3,110	21	Havre—New York.
Mauretania	Cunard Line	30,695	12,678	6,407	69,000	1,800	27	Southampton—New York.
Adriatic	White Star Line	24,541	15,638	19,710	668,000	2,825	17½	Liverpool—New York.
Conte Biancamano	Lloyd Sabaudo	24,416	14,673	7,429	225,000	1,750	20	Genoa—River Plate.
Empress of Canada	Canadian Pacific	21,517	12,811	10,194	377,000	1,770	18	Vancouver—Japan—China.
Maloja	P. & O.	20,837	12,830	12,300	723,000	656	17	London—Australia via Suez.
Albert Ballin	Hamburg American Line	20,815	11,722	14,700	498,000	1,760	16	Hamburg—New York.
Franconia	Cunard Line	20,158	12,162	11,713	314,000	1,560	17	Liverpool—New York.
Reliance	Hamburg American Line	19,582	9,961	7,775	117,000	1,017	17	Hamburg—New York.
Empress of France	Canadian Pacific	18,357	9,951	7,600	281,000	1,600	19	Southampton—Quebec.
Gripsholm	Swedish American Line	17,993	11,002	10,000	300,000	1,617	17	Gothenburg—New York.
Aorangi	Union SS. Co. of New Zealand	17,491	10,733	8,345	287,000	970	18	Vancouver—New Zealand—Australia.
Cameronia	Anchor Line	16,385	9,877	11,000	354,280	1,520	16½	Glasgow—New York.
Comorin	P. & O.	15,132	8,692	10,300	452,000	328	17½	London—Australia via Suez.
Pieter Cornelizoon Hooft	Netherlands S.S. Co.	15,000	—	11,824	—	639	15	Amsterdam—Dutch East Indies.
Lutetia	Cie. Sud Atlantique	14,654	5,599	6,099	24,000	934	20½	Bordeaux—River Plate.
Euripides	Aberdeen Line	14,947	9,399	13,800	682,274	545	15	London—Australia via Cape.
Alaunia	Cunard Line	14,030	8,448	12,069	451,140	1,456	15½	Southampton—Montreal.
Monte Sarmiento	Hamburg South American Line	13,625	8,018	10,876	410,000	2,500	14½	Hamburg—River Plate.
Ballarat	P. & O.	13,100	8,200	11,000	579,350	1,240	14	London—Australia via Cape.
Gelria	Royal Holland Lloyd	13,868	8,121	8,260	335,000	1,474	15	Southampton—River Plate.
Sarpedon	Blue Funnel Line	11,321	6,921	11,100	540,000	150	15	Liverpool—Straits—China.
Suwa Maru	Nippon Yusen Kaisha	10,672	6,637	12,680	13,240	274	16	Antwerp—London—Japan.
Alfonso XIII.	Cia Trasatlantica	10,551	5,914	6,640	137,870	1,400	17½	Spain—West Indies—New York.

Name.	Owners.	Tonnage. Gross.	Tonnage. Net.	Dead-weight (cargo and bunkers).	Cubic capacity (cargo) cu. ft.).	Total passengers.	Speed (knots).	Service.
Tairea	British India Line	7,933	3,756	8,060	339,000	2,680	17	India—Far East.
Chantilly	Messageries Maritime	9,986	5,959	9,000	332,000	336	13	Marseilles—Far East.
Gloucestershire	Bibby Line	8,124	5,079	8,920	420,000	238	15	Liverpool—Rangoon.
Glenogle	Glen Line	9,513	5,880	12,300	749,000	12	12½	London—Far East.
Matsonia	Matson Line	9,402	5,901	9,900	434,790	275	15½	San Francisco—Hawaiian Islands.
Amarapoora	Henderson Line	8,084	5,094	10,200	529,000	146	14	Glasgow—Rangoon.
Highland Piper	Nelson Line	7,490	4,728	6,735	328,000	122	13	London—River Plate.
Port Dunedin	Commonwealth and Dominion Line	7,463	4,453	10,190	618,000	12	14	London—Australia via Panama.
Newfoundland	Warren Line	6,820	4,150	6,500	316,000	190	14	Liverpool—St. John's (Newf'dland).
Coronado	Elders and Fyffes	6,539	3,995	6,310	265,330	97	14½	Bristol—West Indies.
Duisburg	German-Australian Line	6,529	3,800	9,220	547,000	12	13	Hamburg—Australia.
Alban	Booth Line	5,223	3,262	7,150	325,000	156	11	Liverpool—Amazon.
Tasso	Ellerman's-Wilson Line	3,540	2,172	3,570	244,000	405	11	London—Danzig.
Avoceta	Yeoward Line	3,442	1,880	4,000	140,000	150	13	Liverpool—Portugal—Canary Islands.
Patricia	Svenska Lloyd	3,285	1,579	1,700	48,000	182	16	London—Gothenburg.
Patriotic	Belfast S.S. Co.	2,254	937	1,275	45,000	700	18	Liverpool—Belfast.
Perth	Dundee, Perth & London S.S. Co.	2,208	972	1,700	98,100	200	15	London—Dundee.
Baltriger	United Baltic Corporation	1,143	658	845	57,000	190	12	London—Danzig.

there are times when ships travel half empty, and in these circumstances the cargo space is very useful as a source of revenue. Third-class accommodation can be, and sometimes is, dismantled during the slack passenger season for the sake of freight, but no such thing can be done to the more luxurious apartments. Enough, however, has been said to show what a potential force passenger liners can be in the transport of freight. Floating palaces of luxury they may seem in the eye of the general public, but they also fulfil a very utilitarian function in the maintenance of all varieties of over-seas communication.

JOHN P. TAYLOR.



2,900 B.H.P. 2-CYCLE DOUBLE-ACTING ENGINE CONSTRUCTED BY WORTHINGTON-SIMPSON, LTD.

CHAPTER XVII.

Marine Machinery.

Reviews of the progress with marine machinery in recent years generally have had, as their starting point, detailed references to the sweeping advance of the motorship and the replacement of steam by the internal combustion engine in many of the spheres of operation of vessels of all types. This year a new standpoint may, however, be taken, since in many of the principal trading routes of the world, such as eastwards through the Suez Canal, westwards through the Panama Canal, and in the Pacific Ocean only the Diesel-engined trader can so far compete successfully. In view of this conclusion appertaining to to-day's conditions, it would seem unnecessary further to stress the gradual increase of motor tonnage or the preponderance of internal combustion engined vessels in the stocks and completing in our shipyards and docks.

The Fuel Supplies of the World.

The economic conditions compelling shipowners to this technical decision are not necessarily rigid. Publications recently, for instance, of the depletion of certain of the world's great oil-fields must give cause, as the French say, " furiously to think," and certainly some of the greatest shipping concerns will not readily concentrate exclusively on a type of propulsive machinery which ties them inevitably to liquid fuel, and which cannot, in our present state of knowledge, be converted to coal. Such publications as are referred to are concerned more particularly with the American oil-fields, and it is well known that many of the other sources promise the continuance of full supplies. The many similar warnings that have emanated from experts regarding the world's coal resources will readily be called to mind. Although available fuels, both oil and coal, are being consumed more rapidly than Nature is replenishing her stores, yet there must still be untapped vast and unknown reserves. The more rare, the costlier ; and therefore the greater the incentive to man's genius to devise or improve alternative means towards more efficient utilization of whatever supplies are available, and the greater the concentration of effort in those branches of power generation where a particular fuel has peculiar attractiveness as is undoubtedly the case with liquid fuel at sea.

Steam Turbines.

No shipowner, however pledged meantime to Diesel-driven tonnage, is insensible to the great strides being made in steam

generation, particularly in the great power generating stations on land, and the present intensive development in applying some of these advances to marine steam machinery. As the subject of many of the innovations that are contributing to this end is dealt with fully in another chapter (see p. 151), only the more general aspect of this subject will be dealt with herein.

The completion of the machinery of the "King George V." and the successful trials on the Clyde augur well for the programme of work which is now going forward with higher pressures and temperatures than have hitherto been applied at sea with steam machinery. It is hoped that this small but epoch-making vessel will pioneer this development in the same way as her forerunner, the "King Edward." The runs on which the "King George V." is engaged will not give this new system the fullest opportunity of showing, in actual service, the economies which can be obtained from high pressures and temperatures, due to the fact that she must run from pier to pier, and the chances of maintaining equable temperature and pressure conditions are not good. Nevertheless, it is understood that this vessel will undertake special comprehensive trials for the purpose of obtaining full data, and it is hoped in due course that the results will be published and will show substantial and important savings.

New Passenger Liners.

In connection with the new passenger liners which are being built on the Clyde by John Brown & Co., Limited, Clydebank, and William Beardmore & Co., Limited, Dalmuir (see plate facing p. 110), for the Canadian Pacific Steamship Company, the increase in pressure is not so great as in the case of the "King George V.," where 550 pounds per square inch is the maximum working pressure; 350 pounds per square inch, or an increase of 130 pounds per square inch over what might be regarded as the maximum standard practice to-day, has been regarded as sufficient for these two important vessels. Such pressures, of course, involve the use almost necessarily of water-tube boilers, and in order to maintain a pure feed to these boilers, the steam-driven auxiliaries are supplied from cylindrical boilers. The only auxiliaries which will be driven from the water tube boilers are turbo-generators which, of course, do not contaminate the feed. Superheaters are applied to the Yarrow boilers, so that the maximum temperature of the steam will be 680° F., showing a higher temperature range than has ever before been applied to ocean-going vessels.

Diesel Electric Auxiliaries.

In my chapter in previous years the use of Diesel electric auxiliaries on steamships has been consistently advocated. It is a well-known fact that in motorships the annual economy of operation attributable directly to the electric driving of auxiliaries is no small proportion of the total, and with the greater development

of suitable marine generating Diesel-driven electric sets, there remains no deterrent whatever to the application of this system, even when steam is the main propelling medium. In these new important Atlantic liners this, then, is a further innovation of no small consequence, and large Diesel generating sets will supply current for driving most of the auxiliaries aboard the ship. These notable developments in the propulsion of large and important Atlantic liners redound to the initiative and technical courage of the great British Steamship and Shipbuilding Companies, and undoubtedly the anticipated success of these vessels will mark another important forward step in the technique of marine propulsion. In this connection the "Asturias" and "Carnarvon Castle," built by Harland and Wolff, who have always been in the forefront of this movement, are worthy of special mention.

Of very little less importance, if any, are the cargo boats building for the Canadian Pacific Company, where again water-tube boilers are to be employed. Whereas in the case of the passenger vessels, of course, oil firing in the boilers is adopted, in the case of these cargo vessels, the boilers will be coal fired by mechanical stokers. Superheat also will be employed and, as with the passenger vessels, single reduction geared turbines are adopted as the main propelling machinery. Most of the auxiliaries are electrically driven.

Mechanical Stokers at Sea.

With all the rival systems at present in vogue for the propulsion of vessels, the demands made on the technical equipment of the engine-room *personnel* are increasing rapidly. Experience at sea with mechanical stokers is very limited; in the case of the Dutch firm who have adopted this system for some years past, the results have not been by any means unsatisfactory. In these latest proposals outlined in the foregoing, the operating engineers will require to be versed in water-tube boilers, automatic feed regulation, mechanical chain grate or retort type stokers, turbines and single-reduction gear with superheat and Diesel electric auxiliaries—no mean task—and for this reason it will no doubt be some time before the average shipowner, less technically equipped in his engineering personnel, will venture on such a combination, however excellent in the technical and economical senses, such an innovation may be. He will rather prefer some compromise.

Pulverized Fuel.

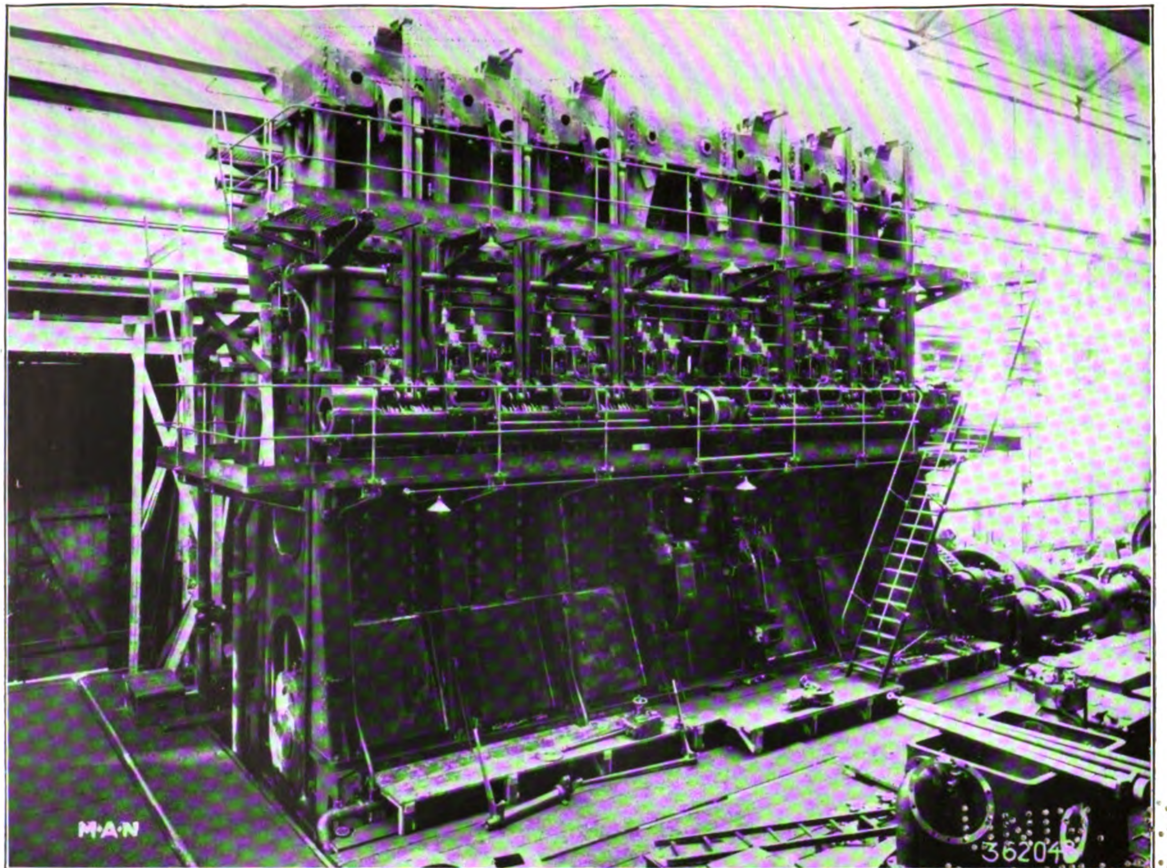
The utilization of pulverized coal in special combustion chambers lined by tubes conveying the feed water to the boiler is a system offering very great attractions and finding a very wide application on land, particularly in the United States of America. The large combustion chamber, in which the radiant heat is absorbed largely by the feed water, gives an extremely high overall boiler efficiency, and the combustion of the fuel can be regulated with exactly the same facility as is the case with oil fuel. Just as with automatic

stokers burning coal on board ship, there is still the question of the handling of coal from the bunkers to the stoker hoppers, which has not yet been solved in any satisfactory way. With pulverized fuel burning there is further the great disadvantage that the combustion chamber is so large and deep that the normal height from the bottom of the ashpit to the top of the steam drum is much increased. Coal, after all, is our natural fuel, and a satisfactory means of adapting pulverized coal to ship propulsion is not beyond the realms of future possibility. The system for use on board ship must comprise separate pulverizing plants, to pulverize the fuel as it is required, since the danger of storing any quantity on board is regarded as inadmissible.

Before leaving the subject of pulverized fuel, it may be recalled that Dr. Diesel's first experiments in Augsburg in 1895–96 were concerned with the injection of powdered coal into the cylinder of a piston engine having an extremely high compression pressure. It is well known that these early experiments proved that combustion could be achieved in this way, but the difficulties of regulating the intensity of heat generation led the inventor to turn to liquid fuel and to develop the standard Diesel engine of to-day. Experiments are still going forward in Germany on the subject of the utilization of powdered fuel in Diesel engines, and it is understood that very considerable success has been achieved and that the control of the combustion can satisfactorily be obtained. It is not known yet how the difficulties with ash and other residue of combustion left in the cylinders contaminating the lubricating film are overcome, nor is it seen how, without installing some chemical plant to disintegrate the coal and to utilize only the constituents capable of reasonably complete combustion, this apparently insuperable difficulty can be overcome in a piston engine. This information, however, is given in passing.

Reciprocating Engines.

There are further developments in marine steam engineering which are worthy of attention. There can be no question but that the high pressure and temperature systems with water-tube boilers, air preheaters, superheaters, elaborate feed heaters, turbines with blading and castings of suitable design and material to withstand the high temperatures with condensing plant capable of sustaining high vacua must, of necessity, mean considerable first cost, especially when such main steam plant is combined with the expensive system of Diesel electric driving for the auxiliary machinery. Therefore efforts have been applied to the improvement of the ordinary reciprocating steam engine, and to this end such valve gears as the "Beardmore-Caprotti" and the "Lentz" are being applied to-day. The diagrams on p. 176 show the saving in space which can be obtained with the former valve gear. In this gear the cam shaft is driven in the manner common to most designs of Diesel engines, *i.e.* by a vertical shaft from the crank shaft. The cams run in oil and serve to operate through the medium of rollers and levers the

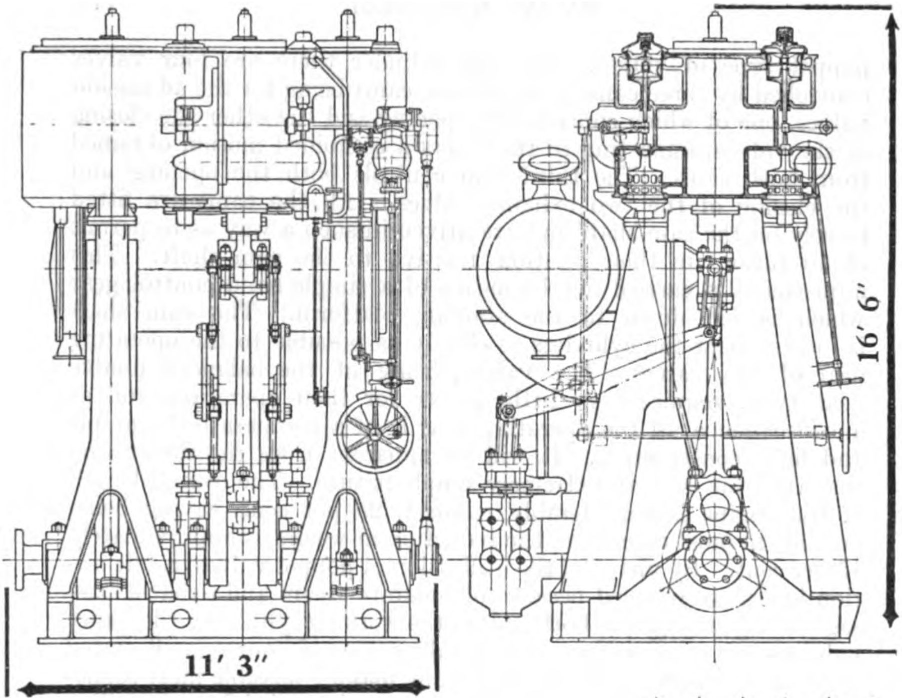


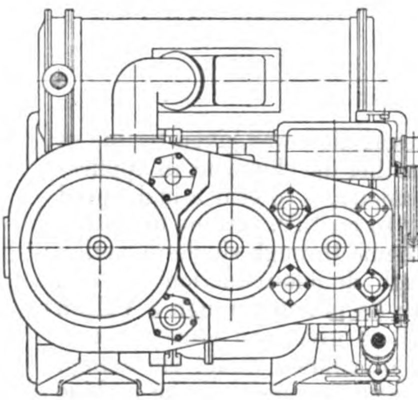
6-CYLINDER DOUBLE-ACTING TWO-STROKE CYCLE M.A.N. ENGINE.
(*Vickers Limited, Barrow-in-Furness.*)

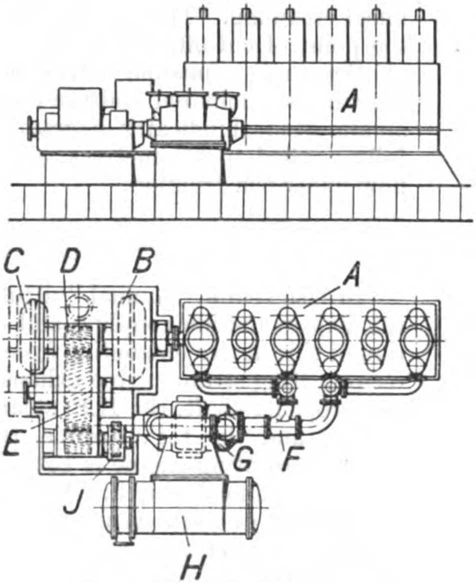
poppet type of valves. On each cylinder there are four valves controlled by three cams, two of these cams being for the admission valves, one of which controls the opening and the other the closing of the valves, imparting to the levers a combined motion obtained from both cams. The third cam controls both the opening and the closing of the two exhaust valves. All the cams are fitted loosely on the cam shaft and are driven in such a way as to permit of alterations in their position relative to the cam shaft. This adjustment is carried out by means of a simple hand control gear which is led down to the starting platform. The cam shaft is located near the cylinders as closely as possible to the operating gear of the valves. The valves, being of the balanced double beat type, require very little power for their operation, and as a consequence all the operating gear is of a comparatively simple and light construction. It will be apparent from the illustration that the gear is of an extremely simple nature. The overall length of the engine is considerably reduced, 25 per cent. saving being possible in most cases, and the reduction in weight is approximately 15 per cent. By virtue of the utilization of poppet valves, condensation losses are reduced because of separate steam and exhaust passages being arranged at both ends of the working cylinders. Clearance volumes are a minimum. Such valves are, of course, well suited to the use of highly superheated steam, making possible most economical steaming. The speed of the engine is varied by controlling the point of cut-off, and at all positions down to a very small cut-off the steam admission valves are fully opened. In this way wire drawing is eliminated and the compression remains constant, giving an almost ideal indicator diagram. This gear has been most successfully applied to locomotives, and marine engines of this type are now under construction.

Vulcan Gearing.

In last year's "Annual" a full description was given by me of the Vulcan marine coupling and a further development in application of this device emanating from Germany, is to gear a high-speed reciprocating steam engine exhausting to an L.P. turbine on to the one propeller shaft, the H.P. steam engine through single-reduction gearing and the L.P. turbine through double-reduction gearing. The reciprocating engine is coupled to its pinion through a Vulcan hydro-mechanical clutch. On p. 176 is given an illustration of the lay-out of such a plant, which, of course, would show high economy in operation, as the reciprocating engine and the turbine are both working over the pressure and temperature ranges for which they are best suited. All the reversing can be done by the reciprocating steam engine or through the Vulcan reversible clutch as shown at C in the diagram on p. 176. Such a system can well be applied to the conversion of existing steamers. One of the main lines of the reciprocating engine, together with its column, cylinder and crankshaft, can be removed. In its place a new shaft can be inserted on which a gear wheel is carried. The exhaust turbine can be







A = High speed reciprocating steam engine. B = Vulcan clutch. C = Astern Vulcan clutch. D = Pinion. E = Main gear wheel on propeller shaft. F = Reciprocating exhaust pipe. G = Exhaust turbine. H = Condenser. J = Double reduction gear.

MARINE ENGINE OF 850 I.H.P. FITTED WITH BEARDMORE-CAPROTTI VALVE GEAR.

RECIPROCATING ENGINE AND EXHAUST TURBINE WITH VULCAN CLUTCH.

geared through a Vulcan coupling and a pinion with this gear wheel. Vacuum augmenting plant would be required, and the net result would be either a saving in fuel or a gain in power and speed of the ship. This system, known as the "Bauer-Wach" system, has found considerable favour on the Continent. It is not considered necessary to give diagrams illustrating the type of conversion or a description, as obviously the changes may be rung on a large number of alternatives. It is considered sufficient to indicate the main principle governing such conversions. When dealing with the Vulcan coupling and geared system, a full description was given in my chapter in last year's "Annual," and a further paper has been read by me before the North East Coast Institution of Engineers and Shipbuilders. The ships so fitted have operated extremely well, and mention may here be made of the latest vessel to be so equipped, the M.S. Wulsty Castle.

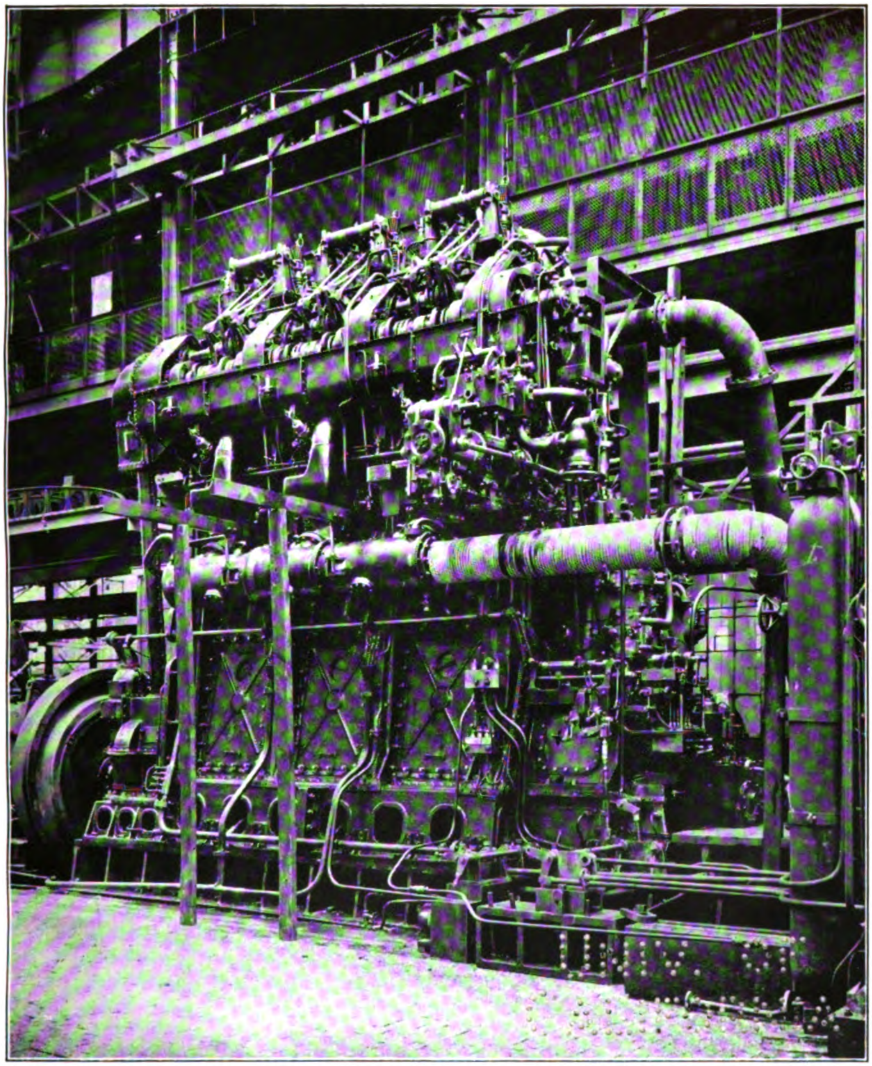
Double-acting Diesel Engines.

This vessel has the distinction of being equipped with the first "Beardmore-Tosi" double-acting four-cycle engines. Two 3-cylinder sets developing each 900 shaft horse-power, are coupled through Vulcan couplings to a single reduction gear box driving a single propeller at 80 r.p.m. This ship has passed through most successful trials in Hamburg and on the Clyde, and is now in service. In this case, the main engines were made reversible, so that reversing is carried out directly in the usual manner. As this is the first engine of the type, and no descriptive matter has hitherto been published, it may be interesting to give the leading particulars. The principal feature in the design of these engines has been the aim towards maximum accessibility, and all the principal parts of the engine can be dismantled with the minimum stripping of gear or adjacent components. In this way, for instance, a bottom cylinder head can be drawn out from between the columns. The top cylinder head can be lifted off by disconnecting the pull rods driving the top cylinder head valves and lifting off in the usual way. The piston can then be drawn through the cylinder. Before dismantling the bottom cylinder head, of course, the piston must be lifted so that the piston rod is clear of its gland in the bottom cylinder head. There are two liners in each cylinder, one carried from the top and one from the bottom. The cylinder block is one casting running fore and aft, holding the engine rigidly together and forming an entablature. Due to the adoption of the well-known "Beardmore-Tosi" principle of director valve, only one valve is required in the bottom cylinder head to control both the induction air and the exhaust. This valve operates in a pocket into which also the fuel is injected through the normal type of "Beardmore-Tosi" fuel valve, lying at a slight angle from the vertical. Combustion is arranged so that the flame never reaches the piston rod, with the result that the hand can be drawn across the piston rod when the engine is operating at full power and developing 100 pounds per square inch mean effective pressure in the bottom cylinder.

The full Diesel principle is, of course, utilized on both sides of the piston. The pistons in this case are oil cooled, the oil being fed in and out in the usual way through the crosshead and up and down the piston rod. In order to obviate complication in an engine of such relatively small size, observing that it is double-acting, starting is arranged to take place entirely in the top cylinders, and to this end starting-air inlet and outlet valves are arranged in each top head. For manœuvring, the cam shaft is moved fore and aft. Rotation of the fulcrum shaft on which the valve levers are mounted serves to lift the rollers clear of their respective cams before the shaft carrying the cams is traversed. The engines work on the air injection principle. So satisfactorily have these engines performed in every respect, in spite of the fact that their revolutions are 250 and therefore the cylinders are relatively small-sized, namely 20 inches diameter by 24½ inches stroke, that I have modified the opinion which I have previously expressed, on a number of occasions, as to the limiting power below which the double-acting engine cannot be expected to compete economically in respect of first cost and general suitability with the single-acting engine. I am now of the opinion that for marine work it is very difficult to state where this limit may come, but that it will certainly be less than the 2,000/3,000 shaft horse-power per engine which I have previously stipulated. When these two small engines were driving the propeller up to speeds of 230 to 240 r.p.m. the absence of vibration and the steady running of the engines were remarkable. The advantages of the clutch were well illustrated when leaving the dock stern first and a number of manœuvres being required of the order of slow astern, stop, slow astern, stop, *ad lib.* The main engines were kept running steadily in the one direction, *i.e.* astern, and oil was introduced into the clutch and emptied from the clutch by controlling the monœuvring valves. The propeller shaft drive was therefore taken up and released with perfect acceleration and deceleration, and the consumption of starting air was nil. With this system, of course, the engines can always be warmed up before stand-by is rung on the engine-room telegraph. This type of installation has a particular aptness for conversion from steam to Diesel, as the same shafting, plummer blocks, stern tube and propeller may be retained. The single-reduction gear can be arranged for any desired ratio as between engine and propeller revolutions. The gear is only single helical, since the oil pressure in the clutch is arranged to balance the axial thrust due to the angle of the helix. In this way the perfect running of such gearing can be explained, as the pinion can float to obtain a perfect bearing on the one helix.

Passenger Motor Liners.

It is pleasant to be able to report the successful operation of all the important motor liners that have recently been put into service. The M.S. Aorangi, built by the Fairfield Co., has, it is understood, never been in port for more than five days since commissioning. The M.S. Gripsholm, built by Armstrong Whitworth & Co., the first



THE NEW THREE-CYLINDER BEARDMORE-TOSI DOUBLE-ACTING FOUR-STROKE CYCLE ENGINE.

double-acting engined liner, has been in service since November 21, 1925, and has given such good results that a sister ship with exactly the same type of propelling and auxiliary machinery may shortly be built. Full logs of the first three voyages of this important ship have been published covering the period from November 21, 1925, to March 8, 1926, comprising three double voyages in winter across the Atlantic. The average speed was just under 16 knots. For heavy weather and fog the vessel had, as is usual, to be slowed down on occasions. The mean i.h.p. developed is given as 15,100 i.h.p., which is equivalent to more than 1,000 b.h.p. per cylinder, so that the engines have not been run easily. The fuel oil consumptions for the main engines, the Diesel auxiliaries, and the heating boiler and galley respectively average per twenty-four hours 45·8, 9·075 and 7·28 tons, giving a mean total per twenty-four hours for all purposes of 62·15 tons.

Other vessels with similar machinery to the above have since gone into service and are performing with reliability and economy.

VIBRATION.

There is one aspect of the question of the suitability of a prime mover for the propulsion of passenger ships which must be referred to. The travelling public, accustomed to the sweet running of the high-speed steam turbine, when at all but perhaps the maximum speed it is difficult almost in any part of the ship for passengers to be conscious of the presence of any type of machinery, have forgotten the thump of the old steam reciprocator, and naturally compare unfavourably the new motor vessels in this respect with the competing steamers.

The question of periodic vibrations with such a complex structure as the hull of many decks of a liner is naturally extremely complicated, and whilst it is generally possible to avoid synchronism between the engine impulses and the general period of the whole ship, at least near the normal speed of revolution of the machinery, it is sometimes difficult to prevent the synchronism of some relatively small part of the structure, as an entity, with the period of perhaps a reciprocating auxiliary engine. To date with the great majority of motorships any such vibration has generally been caused by one of the auxiliary Diesel engines, not so perfectly balanced as the multi-cylindered and therefore better balanced main units.

This subject has come very prominently to the fore during the last few months. An analogy may be permitted. In the early days of automobile practice, the vibrations due to lack of balance were very marked and appreciable. The demand arose for silence and vibrationless running and the developments to this end have been as rapid as they have been completely successful, so that to-day the modern engine, even 4-cylinder, runs at all speeds so perfectly balanced and silenced as almost to belie the existence of its simple reciprocating mechanisms.

It may therefore be postulated that with the demand for more refined conditions of operation of reciprocating machinery in marine

work developments can be foretold towards more perfect balance and silence of operation. This remark applies both to the main and particularly the auxiliary engines.

Another line of attack to this problem is, of course, the adoption of relatively high speed main Diesel engines geared to the propeller. The impulses are very much more frequent due to the high speed of rotation, and therefore much less liable to set up periodic vibrations, which in any case must be of less amplitude than with slower running engines. This subject has been previously dealt with.

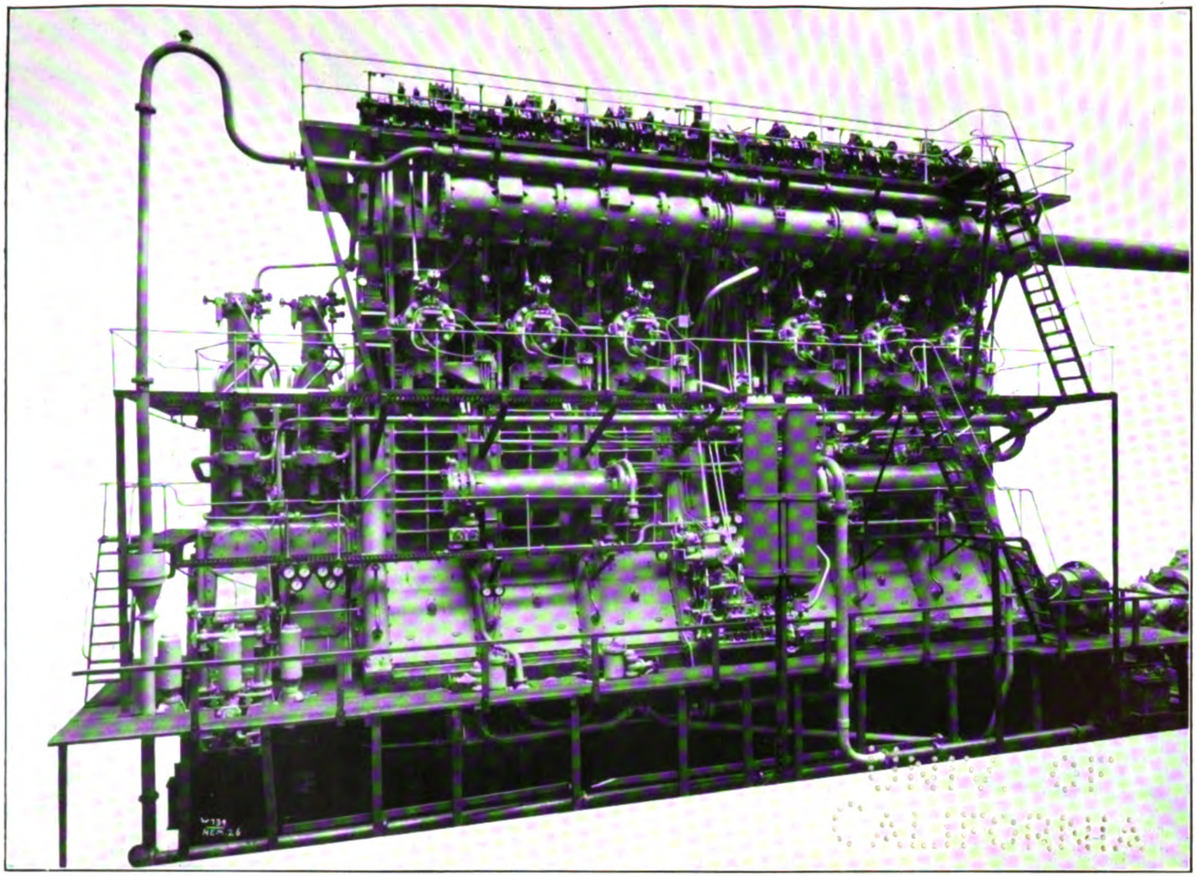
On the topic of silence of operation, much yet remains to be done towards this end. Science is in its infancy in many matters, none more so than that of silencing fast-moving and intricate reciprocating mechanisms.

Types of Diesel Engines.

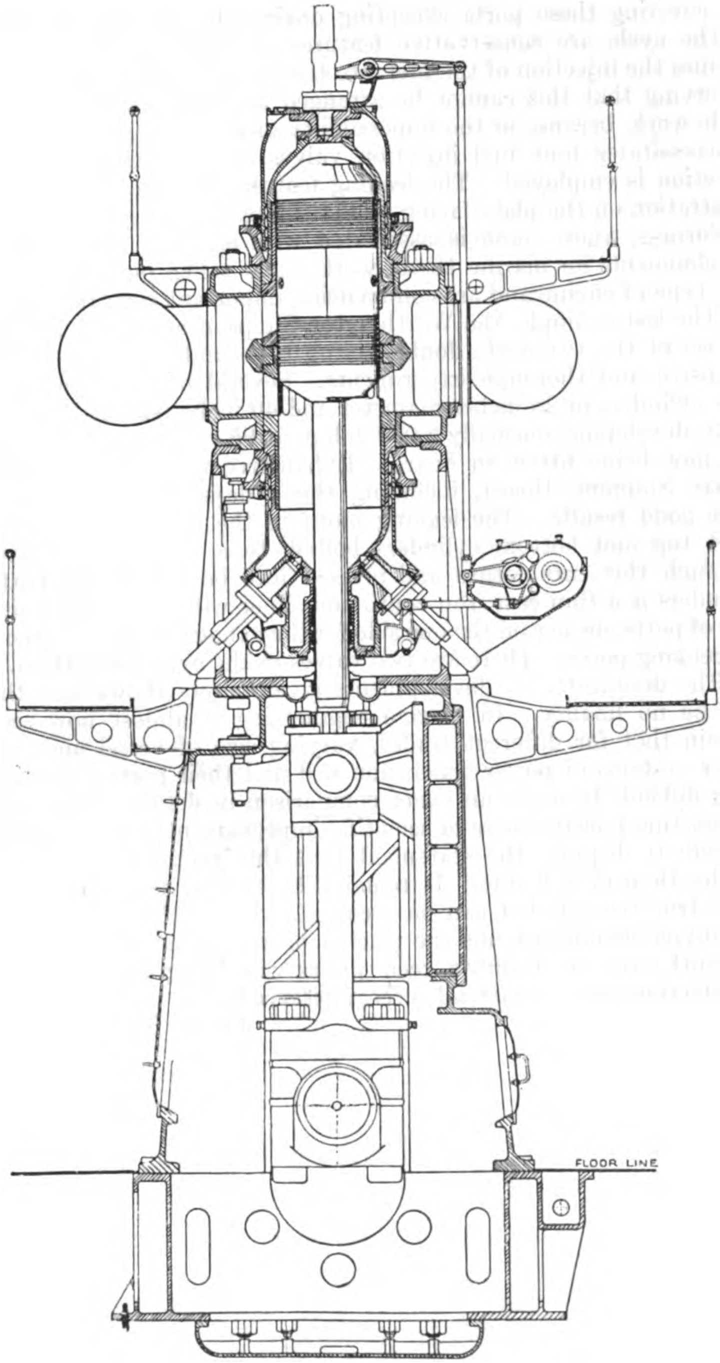
There still remain many types of internal combustion prime movers. Some have dropped out, and new engines come forward. The novelties concern double-acting motors. As already stated, my experience recently has led to the conclusion that the double-acting principle can well be applied to lower powers than has been so far probable on commercial grounds. The double-acting engine must be cheaper and lighter than the single-acting motor. It utilizes the massive members of its structure to better advantage in both compression and tension instead of one or the other, and also stresses the parts for approximately double the percentage of the total running time.

Three double-acting engines have come to the fore this year. The "Beardmore-Tosi" already referred to and shown in the illustration (p. 178), the double-acting two-cycle engine of the Maschinenfabrik-Augsburg Nürnberg A.G. (M.A.N.), shown on the Plate facing p. 174, and that of the Worthington-Simpson Co. of America, illustrated on the Plate facing p. 180, and the opposite page. In past issues of the "Annual" the great part played by the M.A.N. Company and their vast experimental work dating back to 1910 have been related.

The motorship Augustus of 30,000 tons displacement building in Genoa, to be equipped with quadruple screw machinery of this type totalling 28,000 b.h.p. on trial, is described on pp. 219, 221 of last year's issue. In the Hamburg power-station a nine-cylindered engine of 15,000 b.h.p. output driving an alternator has just been put into operation. The motorship Magdeburg, a single-screw motorship of 4,400 b.h.p. developed in six cylinders when running at 84 r.p.m., has completed the first voyage. The leading features of this engine are the design of the central and converging and exhaust belts with four rows of ports, two for each end of the main cylinder; the two liners, one carried from the top, the other from the bottom, both registering in the central belt; and the careful design of all parts exposed to the heat of combustion, to permit of intensive circulation of the cooling water. The duplicate scavenging and exhaust ports for top and bottom cylinders and the long pistons



NORTH EASTERN WERKSPOOR 4,000 B.H.P. 6-CYLINDER FOUR-STROKE CYCLE DOUBLE-ACTING HEAVY OIL ENGINE.



CROSS-SECTION THROUGH CYLINDER OF 2-CYCLE DOUBLE-ACTING ENGINE (WORTHINGTON-SIMPSON, LTD.).

for covering these ports excepting during the appropriate phases of the cycle are conservative features of merit. With two-cycle engines the injection of the fuel into the bottom combustion space—observing that this cannot be arranged as a pocket as with four-cycle work, because of the impossibility of scavenging such a recess—necessitates four fuel injection valves on the under side. Air injection is employed. The leading features can be seen from the illustration on the plate facing p. 174. Messrs. Vickers, of Barrow-in-Furness, whose name is associated with many of the important developments for marine Diesel work, have taken out a licence for this type of engine and are commencing important construction.

The last example, the Worthington-Simpson engine of America, is also of the two-cycle double-acting type and results from very intensive and thorough experiments. Several of these engines of four cylinders of 28 inches diameter and 40 inches stroke have been built, developing normally 3,000 b.h.p. at 95 r.p.m. These engines are now being fitted on board. Exhaustive trials by the United States Shipping Board, including thirty days' non-stop running, gave good results. The leading motif in the design is the forged steel top and bottom cylinders bolted to a central entablature. Through this entablature and pressed into both top and bottom cylinders is a thin cast iron continuous liner with the normal single row of ports, deeper on the one side for the exhaust than the opposite scavenging ports. There are two valves in the cylinder bottom.

The description of developments given surely shows that there can be no finality. In marine engineering it almost now seems certain that for different trades, varying size of vessel and duty, many systems of power generation will find their particular vogue. It is difficult to make an exact comparison in definite terms when contrasting relative rates of scientific improvement, but it would be difficult to disprove the statement that this year has seen greater strides than ever before. It remains to express the hope for the only true reward that can be received, when with reviving trade, improving conditions, and the placing of numerous orders, the bulk of work even at to-day's keen prices will bring the measure of satisfaction and commercial success deserved.

James Richardson.

CHAPTER XVIII.

Notable Merchant Ships of the Year.

For young and old, ships and shipping possess an attraction; this is especially the case of members of a maritime nation. It is not that a ship must possess beautiful lines or a smart rig—goodness knows there are many positively ugly craft afloat—before she can attract interest; but eyes see in a vessel a work produced by man's inventive genius to overcome the natural elements and to serve the world in general. And to those who recognize the call for efficiency beauty may be found in the adaptation of mechanism to serve the purposes of mankind. To one closely associated with ships, however, the appearance of a vessel tells him many things—her nationality, trade, service; if she is a new vessel then his knowledge tells him possibly where her owners have improved on their previous ships to suit their special trade requirements. The illustrations in the "Annual" are not, therefore, one of the least attractive of its features, and it has been the aim to record the most interesting vessels built or building since the last edition. These illustrations deal with both naval and merchant vessels, but as the characteristics of the former are dealt with elsewhere in the volume the following descriptions cover the new merchant craft only.

The frontispiece deals with a vessel built by Vickers Limited, Barrow-in-Furness, and it is not inopportune to note the remarkable change in the nature of the work turned out from this yard. When it is considered that the works were designed and laid out for the construction of naval vessels, it is no mean achievement to have changed over to a different type of construction and to be able to compete successfully with any merchant shipyard in the country.

Three interesting vessels now under construction by Vickers Limited are the Orient liner Orford, the Donaldson motor liner Modavia, and turbine passenger steamer Kedah. The two latter vessels are illustrated on the plates facing pp. 156 and 122 respectively.

New Orient Liner.

The Orient liner Orford is the third 20,000-ton passenger liner ordered by these owners from Vickers Limited within the past few years. The two previous vessels, the Orama and Otranto, have been in service for some time, and it is probable that the Orford will embody certain improvements gained from the experience of running these boats, which, with the Oransay, all of 20,000 gross

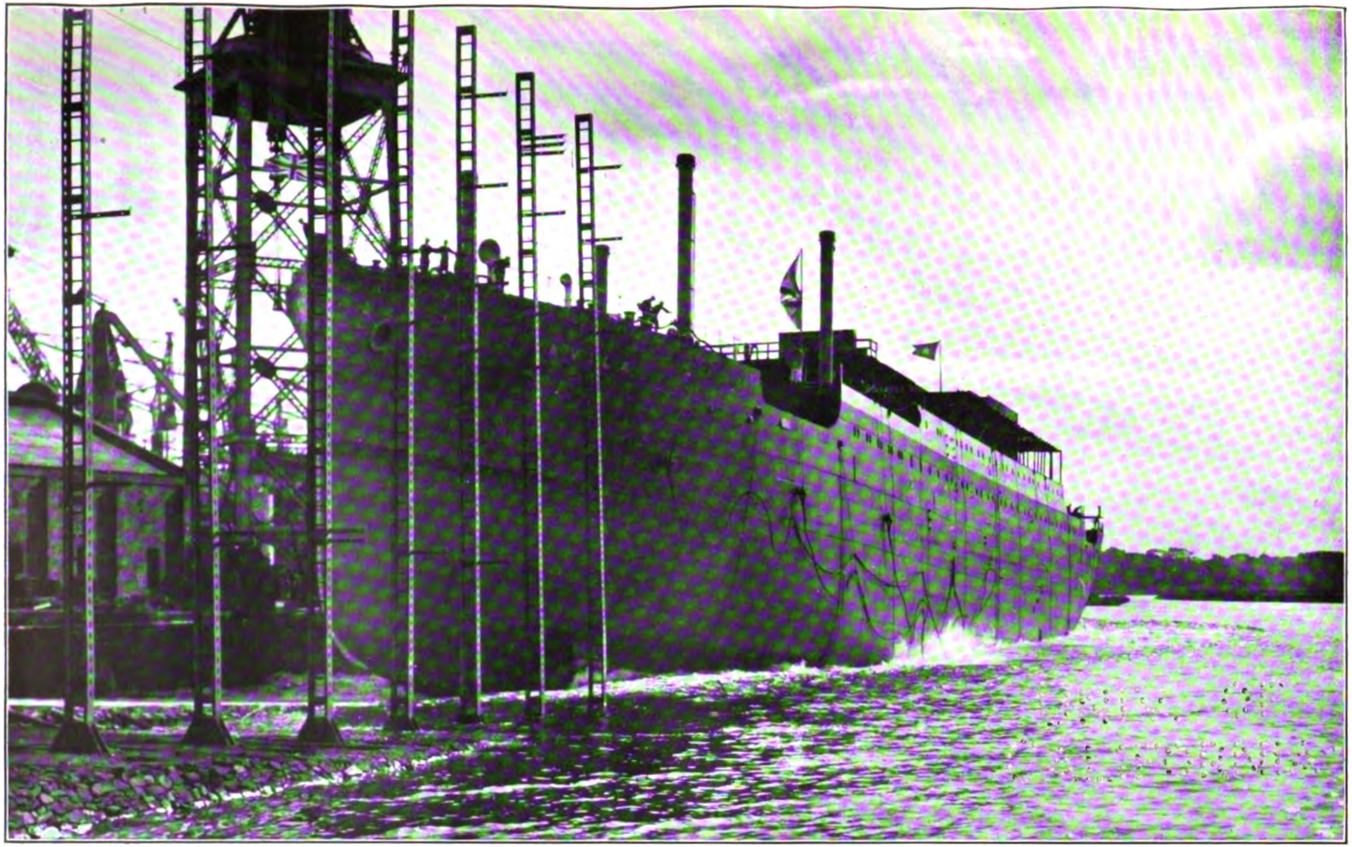
tons, are the largest vessels in the Antipodes trade. The Orford is of the following dimensions: length, b.p., 630 feet; breadth, moulded, 75 ft.; depth, moulded, 47 feet; gross tonnage, 20,000 tons; draught, 29 feet 6 inches. Her passenger accommodation is of a very high standard and provides for 553 first, and 1,160 third-class passengers, which, with a crew of 447, amounts to 2,160 all told. Accommodation is arranged on six decks, that on the lowest deck being portable.

The propelling machinery consists of two sets of turbines of the Parsons type, all of which run at 1,372 r.p.m., which is reduced to 95 r.p.m. at the propellers by single-reduction gearing. Steam is supplied at 215 lbs. per sq. in. by six double-ended and two single-ended oil-fired return-tube boilers arranged in two boiler-rooms. The installation develops 19,500 s.h.p. and will give the vessel a speed of 20 knots. It is interesting to recall that the Vickers-built Orama has maintained a very low specific fuel consumption in service, a figure below 0·8 lb. of oil per s.h.p. per hour for all propelling purposes being consistently realized. An interesting modification on the Orford as compared with the vessels mentioned previously is that the others had two single-ended boilers in the forward boiler-room, making four in all, as against the two single-ended boilers fitted in the after boiler-room of the Orford. This alteration allows for the innovation of an open-air swimming bath which will doubtless be appreciated by her passengers.

Special Type Passenger Steamer.

A new business connection was formed when the Straits Steamship Co. ordered the Kedah from Vickers Limited. This turbine passenger steamer is for service between Singapore and Penang and is therefore of special design. Her appearance will be noted from the plate facing p. 122. The shell of the Kedah is being constructed of special high elastic steel, as are also the decks, tank top, framing, and all main girder work. All exposed woodwork is of teak. Her dimensions are: length, b.p., 310 feet; breadth, moulded, 50 feet 3 inches; depth, moulded, to main deck, 17 feet 9 inches. On a draught of 14 feet 8 inches the vessel carries a deadweight of 1,170 tons. The vessel has three cargo holds, two forward of the machinery space and one aft. For handling the cargo two cranes will be installed at each hatch, and these, together with other deck machinery will be steam-driven. Accommodation will be provided for 76 first-class passengers; 64 in 2-berth cabins and 12 in single-berth cabins, in addition to 800 native passengers in the 'tween decks.

The propelling machinery will consist of two sets of single-reduction geared turbines, which are designed to develop 5,800 s.h.p. in ordinary service and give the vessel a speed of 18 knots. Steam will be supplied at 220 lbs. per sq. in. by four Babcock & Wilcox oil-fired water-tube boilers, fitted with superheaters and working under forced draught.



LAUNCH OF THE BLUE STAR PASSENGER AND REFRIGERATED CARGO LINER AVILA FROM THE CLYDEBANK SHIPYARD OF JOHN BROWN & CO.

[*See page* 187.

Refrigerated Motorship.

The Donaldson motor liner Modavia is practically a sister-ship to the first motorship built for these owners, the Moveria, constructed at Barrow about two years ago. She is designed for the Canadian cattle trade, and in addition carries refrigerated and general cargo. Her main dimensions are: length, b.p., 385 ft; breadth, moulded, 53 feet 6 inches; depth to upper deck, 38 feet. On a draught of 26 feet 4 inches she carries 7,500 tons of cargo, her capacity for which is as follows: non-insulated cargo, 261,200 cubic feet; insulated cargo, 180,200 cubic feet; number of cattle stowed on upper deck, 603; number of cattle stowed on weather deck, 318. A feature of the construction of these Donaldson motorships is the double-bottom construction. This is built on the Vickers-Wingate system, which consists of a series of widely spaced transverse floor plates, having between them and secured thereto a number of fore-and-aft girders of skeleton construction. The advantages claimed for this system of double-bottom construction are: economy of construction; accessibility, which allows easy runs for pipe-lines and also permits of piping being fitted in long lengths and therefore with fewer joints, which tends to localize double-bottom damage; savings in weight and in cost.

The propelling machinery of the Modavia consists of a single Vickers solid-injection four-stroke cycle heavy-oil engine, having eight cylinders, each 30-inch bore and 45-inch stroke, capable of developing 2,700 b.h.p. at 110 revolutions per minute. This installation will give the vessel a service speed of 11½ knots. Two boilers are fitted for supplying steam for certain of the auxiliaries and also to the refrigerating machinery.

High Pressure Steamers.

From the marine engineering point of view the most notable ship of the year is undoubtedly the Clyde pleasure steamer King George V., and the successful operation of this vessel is bound to have a marked effect on marine propulsion, both for merchant ships and naval vessels, just as her predecessors, the King Edward and Queen Alexandra, also productions of Wm. Denny & Brothers, Dumbarton, had in their day. In fact, development has already started, for the two new Canadian Pacific liners are to utilize steam at 350 lbs. per sq. in. The subject of high steam pressure and temperature as applied particularly to the King George V. is dealt with in another chapter; it is sufficient here to record that she is a vessel 260 feet in length, with a beam of 32 feet, and a depth of 11 feet. In general appearance the King George V. will be readily distinguishable from her sister-ships, as her designers have followed the latest cross-Channel practice of closing in the promenade deck, affording protection against inclement weather. Higher steam pressures, however, are not confined to turbine installations, as there are triple-expansion marine steam engines under construction in Holland which are to use steam at a pressure of 500 lbs,

per sq. in., and the Central Marine Engine Works, West Hartlepool, have supplied a set of quadruple-expansion engines for the Ellerman liner City of Bath which utilize steam at 265 lbs. per sq. in. The King George V. and the new Canadian Pacific liners are illustrated respectively on the plates facing pp. 110 and 151.

Bracketless Tanker.

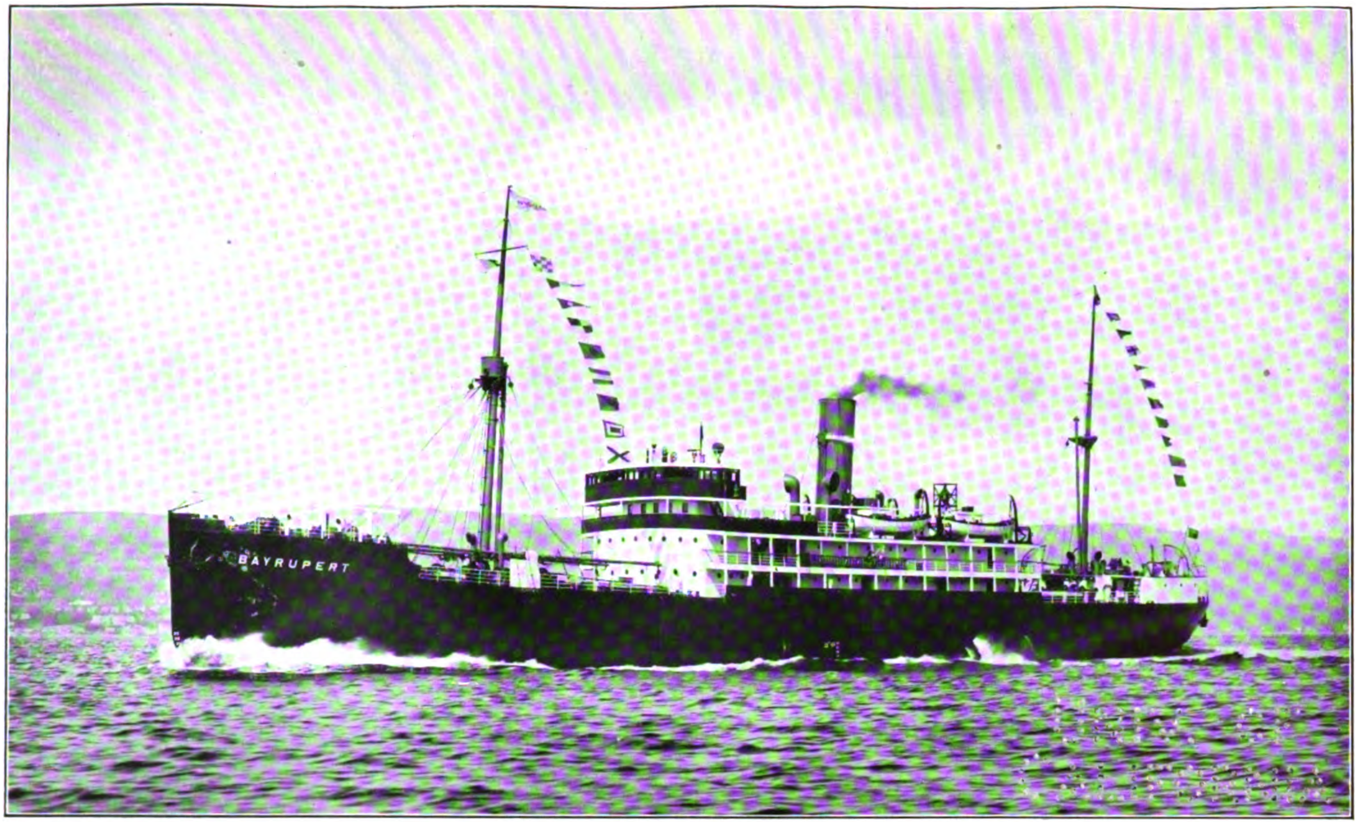
From the purely structural point of view, a most interesting vessel is the British Inventor, which Palmers Shipbuilding & Iron Co. have constructed on Sir Joseph W. Isherwood's new bracketless system, a development of his longitudinal framing system of construction. In the latter form of construction the longitudinals of the sides, bottom and deck of the vessel, as well as the longitudinal stiffeners on the centre line bulkhead, are stopped at the main transverse bulkheads, to which they are bracketed. It has been found by experience, especially in tanker construction, that trouble has been met with due to leakage, and the new system has been developed to eliminate the source of that trouble. As its name, the Isherwood "bracketless" system, implies, the conventional Isherwood system is adopted, but without any brackets to the longitudinals.

In discarding the brackets, the strength of the structure is maintained by a modified distribution of scantlings and materials, which, it is claimed, removes the maximum point of stress on the longitudinal members away from the bulkhead, the main feature being the fitting of the deep transverse frames closer to the bulkheads than is the case in the ordinary Isherwood system of longitudinal framing.

The first vessel to be built on this system is the British Inventor, an illustration of which faces p. 136. This vessel has a deadweight of 11,000 tons, a gross tonnage of 7,200 tons, and is of the following dimensions: length, b.p., 430 ft.; breadth, moulded, 57 ft. 8 ins.; depth to upper deck, 34 ft. 3 ins. The order for the vessel was placed by Sir Joseph W. Isherwood, and the ship was later purchased by the British Tanker Company. It is interesting to note that the same builders are constructing a second vessel on this system of construction, while a bracketless ship of 17,400 tons deadweight is building in America for the Gulf Refining Company.

Passenger Motorships.

With motorships forming a large portion of new construction, many interesting vessels have been turned out. The most distinctive of those built in British shipyards are those turned out by Harland & Wolff, Ltd., at Belfast, the Asturias, Carnarvon Castle, and the Accra. The R.M.S.P. liner Asturias was completed in February last, and with a gross tonnage of 22,137 tons holds the distinction of being the largest motorship in service. All three vessels are propelled by Harland & Wolff—Burmeister & Wain four-stroke cycle double-acting heavy-oil engines. The striking



HUDSON BAY COMPANY'S PASSENGER AND CARGO STEAMER BAYRUPERT.
(Built by the Ardrossan Dockyard, Ltd.; engined by John G. Kincaid & Co., Ltd.)

appearance of the Carnarvon Castle and the Accra is shown by the illustrations facing pp. 116 and 162 respectively. The twin-screw motor liner Carnarvon Castle is a vessel of 20,063 gross tons and has been built for the Union-Castle Line's fleet. Her principal dimensions are: length, b.p., 655 feet 9 inches; breadth, moulded, 73 feet; depth, moulded, 45 feet 6 inches, and with propelling machinery developing 20,000 i.h.p. a service speed of about 16 knots is attained.

The twin-screw motor passenger liner Accra has been built for the West African service of Elder, Dempster & Co., which firm, it is interesting to note, was the first to put into service a passenger liner propelled by Diesel engines, the vessel in question being the Aba, which has been running for nearly five years. The Accra is a vessel of 9,336 gross tons, her main dimensions being 468 feet 9 inches, length overall; 62 feet, moulded, breadth; 35 feet, moulded, depth. Each of the main engines develops 3,750 i.h.p. Accommodation is provided for about 500 passengers and crew, and a high standard of decoration and furnishing has been adopted.

Blue Star Development.

The twin-screw passenger and cargo steamer Almeda, which is illustrated on the plate facing p. 166, represents a new departure for the Blue Star Line. Before placing the contract for this vessel and her four sister-ships, these owners had participated only in the carriage of cargo, chiefly frozen produce. The five new vessels, however, three of which are building at Birkenhead by Cammell, Laird & Co., and two at Clydebank by John Brown & Co., are to have accommodation for about 180 first-class passengers in addition to 12,000 tons of insulated cargo. These vessels, which are for the South American trade, are of the following dimensions: length 510 feet, breadth 68 feet, depth 37 feet 3 inches, with a gross tonnage of 13,880 tons. They are each to be propelled by two sets of Parsons geared turbines. The accommodation of these new vessels is to be of the highest standard, and this new venture of the Blue Star Line will be watched with interest. An illustration of the launch of the Avila, building by J. Brown & Co., appears on the plate facing p. 184.

Most Powerful Cargo Motorship.

Another interesting refrigerated ship is the Upwey Grange, built by the Fairfield Shipbuilding and Engineering Company for the Houlder Line, Ltd. This vessel, an illustration of which appears on the plate facing p. 145, is claimed to be the largest refrigerated vessel, and the most powerful cargo motorship, in service. Her dimensions are: length 431 feet, breadth 62 feet 5 inches, depth 35 feet 3 inches, with a gross tonnage of 9,130 tons. The Upwey Grange has seven cargo holds which, with the 'tween decks, are subdivided into 54 compartments for the carriage of frozen meat, having a capacity of 500,000 cubic feet, in addition to which there is 3,000 cubic feet for refrigerated ship's stores. The propelling

machinery consists of two sets of Fairfield—Sulzer Diesel engines, similar in design to those fitted in the motor passenger liner Aorangi, and develops a total of 6,400 b.h.p. Another product of the Fairfield yard is the twin-screw geared turbine steamer St. Tudno (see plate facing p. 124), for the Liverpool & South Wales Steamship Co. In design, this vessel is a distinct advance on the well-known La Marguerite, which she replaces. The St. Tudno has an overall length of 329 feet, a beam of 44 feet, a depth of 13 feet 6 inches, and a draught of 9 feet. She has a gross tonnage of 2,337 tons, and a speed of 19 knots. Accommodation is provided for a total approaching 2,500 persons, first and second class, and the public rooms include dining saloons, lounge bar, general saloons, tea-rooms and shelters, all of which are decorated and furnished to a very high standard. Unlike other vessels of the owners' fleet, her propelling machinery consists of two sets of turbines driving the propellers through single-reduction gearing. Her two double-ended boilers burn oil fuel under forced draught.

The Biggest Cable Ship.

The largest cable ship in the world was completed recently. This vessel was the Dominia, illustrated on the plate facing p. 188. She is owned by the Telegraph Construction and Maintenance Co., London, and was built on the Tyne by Swan, Hunter and Wigham Richardson, Ltd., which firm have built and engined about one-fourth the number and over one-third the tonnage of the cable steamers now afloat. Cable steamers are a type of vessel particularly well-founded, both as regards equipment and accommodation for the crew; the Dominia is certainly no exception, and with her fourpole masts, cutwater stem and a single funnel she has the appearance of a very smart yacht. Her dimensions are: length, over all, 509 feet; breadth, 59 feet; depth, 37·4 feet; with a gross tonnage of 9,250 tons and a deadweight of 12,000 tons. Her propelling machinery consists of two sets of triple-expansion engines and steam is supplied by five oil-fired boilers; the vessel attained a speed of 14½ knots on trial. The telegraph cable is carried in four main tanks. The Dominia sailed from the Thames on September 11 for her maiden voyage, during which she was to lay the longest cable in the world in one length. This cable weighed 8,500 tons, and it was estimated that this would be laid at the rate of 200 miles per day.

The Ellerman Lines, Ltd., demand a high standard in construction and equipment for their vessels, and the City of Lyons is no exception to these requirements. Built by Swan, Hunter and Wigham Richardson, Ltd., she is a vessel of 7,063 gross tons and about 11,300 tons deadweight. Her dimensions are: length, b.p., 455·5 feet; breadth, 58·1 feet; depth, 31·8 feet; and cargo is carried in five holds. The propelling machinery consists of a single set of Parsons turbines with single-reduction gearing, all of which, together with the three single-ended boilers, which are fitted with pre-heaters, was supplied by the Wallsend Slipway and Engineering Co.; all the

TELEGRAPH CONSTRUCTION AND MAINTENANCE COMPANY'S CABLE STEAMER DOMINIA.

(*Built and engined by Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.*)

[*See page* 188.

engine-room auxiliary machinery is electrically driven. The City of Lyons is illustrated by the plate facing p. 140.

First French Passenger Motorship.

Of the leading maritime nations, France was by far the slowest to see the possibilities of the heavy-oil engine for marine propulsion, and it is only in the past two or three years that the first French motorship made its appearance. On the plate facing p. 134, there appears the first French motor passenger liner, the Théophile-Gautier. From the illustration it will be noted that the vessel was launched in an almost completed condition, the builders being the Ateliers et Chantiers de France. The vessel has been constructed for the Mediterranean (Egypt-Syria) service of the Services Contractuels de Messageries Maritimes, and her dimensions are: length, b.p., 425 feet; breadth, 56 feet; depth to upper deck, 35 feet. Her loaded displacement is 10,340 tons on a draught of 22 feet 2 inches, her gross tonnage being about 9,000 tons with a deadweight of 4,500 tons. The vessel has three accommodation decks, which provide for a total of 728 persons, three classes of passengers being carried. The propelling machinery, which was built by the Compagnie de Construction Mécanique Procédés Sulzer, consists of two 6-cylinder two-stroke cycle Sulzer engines developing a total of 4,500 b.h.p.

Largest American Built Liner.

The largest merchant ship ever contracted for by an American shipyard is illustrated on the plate facing p. 128. This vessel, the Malolo, is being built by the William Cramp and Sons' Ship and Engine Building Company, Philadelphia, for the Matson Navigation Company's service between San Francisco and Honolulu. The vessel is to be ready for service in the spring of 1927, and her contract price was $6,560,000. She has an overall length of 582 feet, a beam of 83 ft., a depth of 54 ft., and a displacement of 22,050 tons. Her two sets of turbines develop a total of 25,000 s.h.p., and are estimated to give the vessel a service speed of 21 knots, which will enable the Malolo to complete her voyage in 4½ days, 1½ days faster than the ships of the existing service. Only one class of passenger is carried, and accommodation is provided for 680 persons exclusive of the crew. The vessel is to be fitted out and furnished with swimming pool, gymnasium and other special features of the modern trans-atlantic liner. The design, prepared early in 1924 by the architects, Gibbs Bros. Co. Inc., New York, provided for a smaller vessel which was to be propelled by turbo-electric machinery of 24,000 s.h.p.; but the Malolo is designed for conversion to a naval auxiliary cruiser and as such her design was subject to the approval of the naval authorities, who evidently in this case did not favour electrical propulsion.

The intermediate liner Changte, illustrated on the plate facing p. 160, is typical of the high class of vessel turned out by the Hong-kong and Whampoa Dock Co., Ltd. She is owned by the Australian-

Oriental Line, and is run on the service between Hongkong and Australia. Her chief particulars are: length, b.p., 350 feet; breadth, moulded, 48 feet; depth to upper deck, 26 feet; gross tonnage, 4,324 tons; draught, 23 feet. The Changte is arranged for carrying a mixed cargo and has 49,000 cubic feet of insulated space for the carriage of frozen meat. Accommodation is provided for 40 first-class, and 30 second-class, European passengers, as well as 26 second-class Chinese passengers, and 192 deck passengers. The propelling machinery, which was also built at Hongkong, consists of a single set of triple-expansion engines, which develop about 4,000 i.h.p., steam being generated by three single-ended Scotch boilers. The auxiliaries are all of British manufacture. The Changte is capable of maintaining a speed of over 14 knots.

Latest Hamburg-Amerika Liner.

On the plate facing p. 130 there is reproduced an illustration of the new Hamburg-Amerika liner Hamburg, the third to be completed of the owners' Albert Ballin class. She was built by Blohm and Voss, and has the following principal particulars: length, b.p., 602 feet; breadth, 78 feet 9 inches; height to main deck, 55 feet 6 inches; gross tonnage, 20,815 tons.

The two sets of geared turbines develop 6,500 s.h.p. each at 2,100/100 r.p.m., and the speed of the vessel is 16·2 knots. Accommodation is provided for 222 first-class, 476 second-class, and 456 third-class passengers, in addition to a crew of 441. The vessel has 12 main watertight bulkheads and complies fully with the international agreement on the safety of life at sea.

As in the case of her sister-ships, features of the Hamburg are the bulges and the anti-rolling tanks. It is stated that, apart from the question of stability, the bulges have been found to have a beneficial effect on the resistance, and the form decided on finally was the result of extensive tank experiments. The anti-rolling tanks are embodied in the bulges, and extend for about 180 feet amidships. On the Albert Ballin and Deutschland the angle of roll is said to have been reduced to less than one-third. The device can be placed out of action in harbour by valves closing the connecting air passages; there is thus provided a valuable means of easily and quickly increasing the stability of the unladen vessel. Every fourth frame is a web frame, and, in the double sides, the outer plates are of normal thickness, the inner walls of the tanks being thinner.

W. H. Clapham.

PROFILES OF
BRITISH AND FOREIGN WARSHIPS
AND MERCHANT SHIPS

[In order to facilitate identification, the ships are arranged in accordance with the number of funnels and masts, as these are the features most easily distinguished at a distance. The page indicated, in the case of warships, refers the reader to the table where full particulars of the ships will be found. All the profiles are drawn to the scale ⅓ in. = 100 ft.]

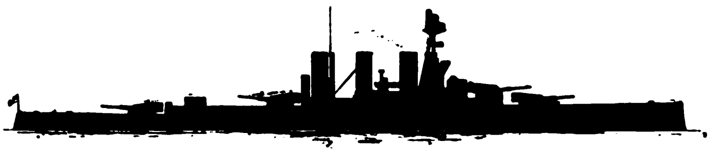
[Indexes to the names of vessels of which profiles are included in this section are given at the end of the volume.]

CAPITAL SHIPS.

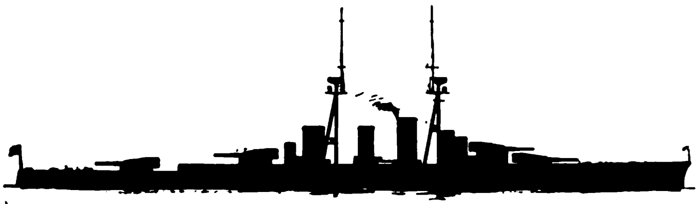
[In order to facilitate identification, the ships are arranged in accordance with the number of funnels and masts, as these are the features most easily distinguished at a distance. The page indicated, in the case of warships, refers the reader to the table where full particulars of the ships will be found. All the profiles are drawn to the scale $\frac{1}{2}$ in. = 100 ft.]

[Indexes to the names of vessels of which profiles are included in this section are given at the end of the volume.]

FRANCE. Battleships. Condorcet, Diderot. (See p. 276.)



GREAT BRITAIN. Battle-cruiser. Tiger. (See p. 264.)



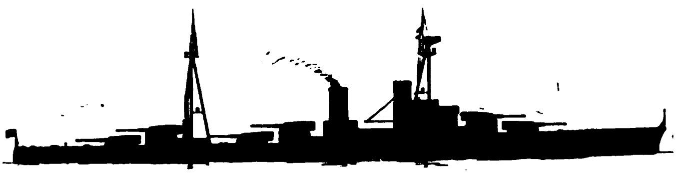
JAPAN. Battle-cruisers. Haruna, Hiyei, Kongo, Kirishima. (See pp. 284 and 285.)

FRANCE. Battleships. Courbet, Jean Bart, Paris. (See pp. 276 and 277.)

GREAT BRITAIN. Battle-cruiser. Hood. (See p. 262.)

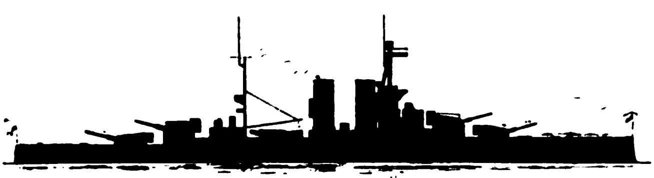
GREAT BRITAIN. Battle-cruisers. Renown, Repulse. (See p. 263.)

JAPAN. Battleships. Mutsu, Nagato. (See p. 285.)



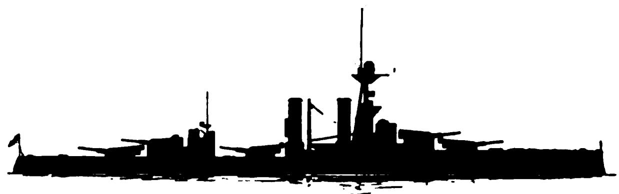
JAPAN. Battleships. Hyuga, Ise. (See p. 284.)

JAPAN. Battleships. Fuso, Yamashiro. (See pp. 284 and 285.)



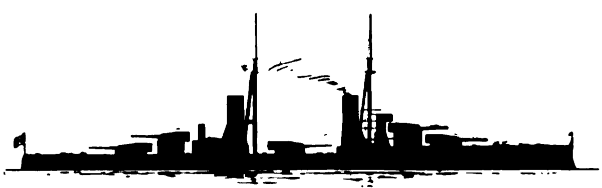
GREAT BRITAIN. Battleships. Barham, Malaya, Queen Elizabeth, Valiant. (See pp. 262 and 263.)

UNITED STATES. Battleships. California, Tennessee, Colorado, Maryland, West Virginia. (See pp. 294, 295, and 297.)

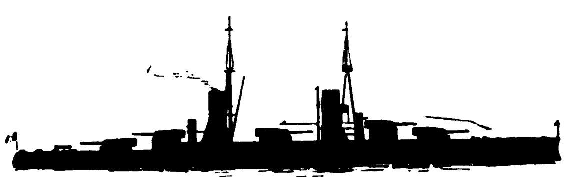


GREAT BRITAIN. Battleships. Benbow, Emperor of India, Iron Duke, Marlborough. (See pp. 262 and 263.)

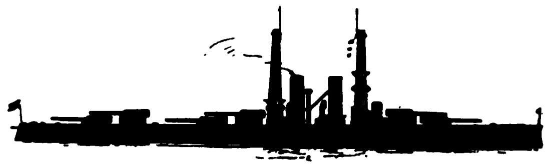
GREAT BRITAIN. Battleships. Centurion, King George V (See p. 262.)



ITALY. Battleships. Andrea Doria, Caio Duilio. (See p. 281.)

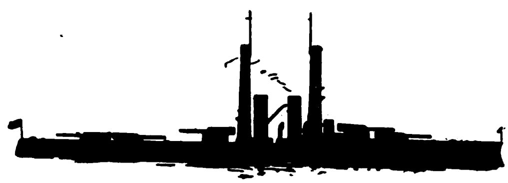


ITALY. Battleships. Conte Di Cavour, Giulio Cesare. (See p. 281.)



UNITED STATES. Battleships. Arkansas, Wyoming. (See pp. 294 and 297.)

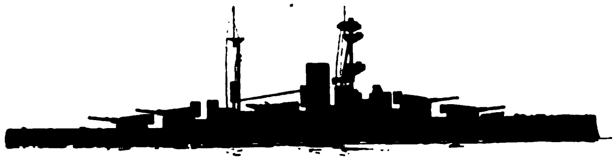
FRANCE. Battleships. Bretagne, Lorraine, Provence. (See pp. 276 and 277.)



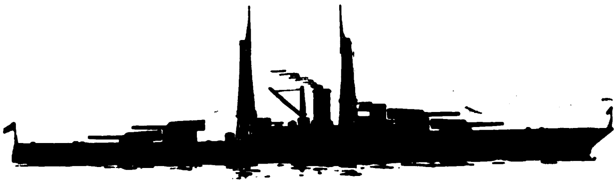
UNITED STATES. Battleships. Florida, Utah. (See pp. 295 and 297.)

GREAT BRITAIN. Battleship. Warspite. (See p. 264.)

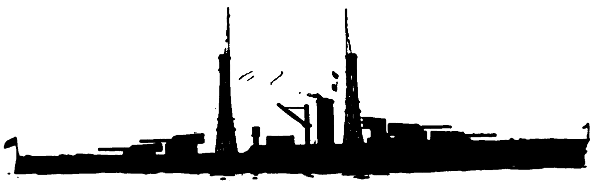
UNITED STATES. Battleships. New York, Texas. (See pp. 296 and 297.)



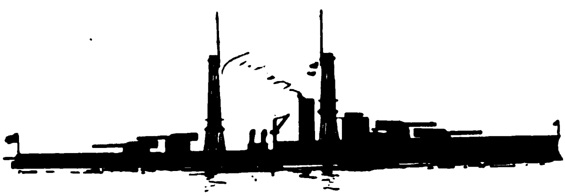
GREAT BRITAIN. Battleships. Ramillies, Resolution, Revenge, Royal Oak, Royal Sovereign. (See p. 263.)



UNITED STATES. Battleships. Idaho, Mississippi, New Mexico. (See pp. 295 and 296.)

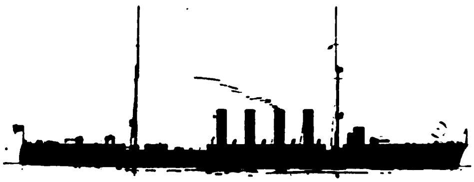


UNITED STATES. Battleships. Arizona, Pennsylvania. (See pp. 294 and 296.)

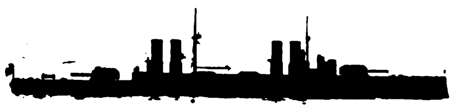


UNITED STATES. Battleships. Nevada, Oklahoma. (See p. 296.)

CRUISERS.



JAPAN. Cruisers. Chikuma, Hirado, Yahagi. (See pp. 286 and 287.)



ITALY. Armoured Cruisers. San Giorgio, San Marco. (See p. 281.)

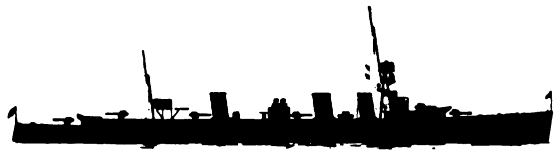
FRANCE. Light Cruiser. Mulhouse (*ex-German* Stralsund). (See p. 278.)

ITALY. Scout Cruisers. Marsala, Nino Bixio. (See pp. 282 and 283.)

GREAT BRITAIN. Light Cruisers. Birmingham, Dublin, Lowestoft, Southampton. (See pp. 265 and 269.)

ITALY. Light Cruiser. Taranto (*ex-German* Strassburg). (See p. 283.)

FRANCE. Light Cruiser. Thionville (*ex-Austrian* Novara). (See p. 278.)

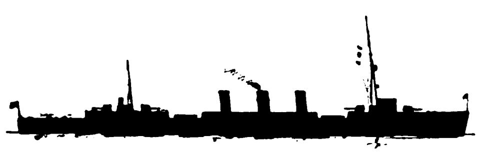


GREAT BRITAIN. Light Cruisers. Emerald, Enterprise. (See p. 268.)

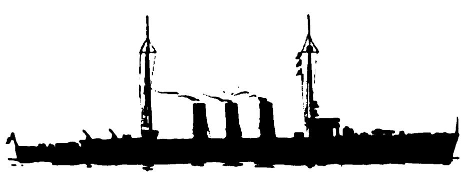
JAPAN. Light Cruisers. Kiso, Kitakami, Kuma, Oh-i, Tama.
*** Abukama, Isudzu, Jintsu, Kinu, Natori, Nagara, Sendai, Yura.**
(See pp. 286 and 287.)

* Slightly different bridge to above. Has aircraft hangar incorporated in bridge structure.

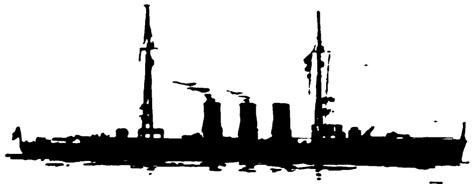
FRANCE. Light Cruiser. Metz (*ex-German* Königsberg). (See p. 278.)



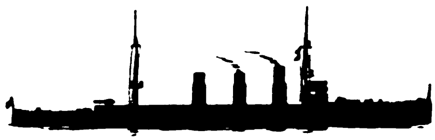
JAPAN. Light Cruisers. Tatsuta, Tenryu. (See p. 287.)



FRANCE. Light Cruiser. Strasbourg (*ex-German* Regensburg). (See p. 278.)

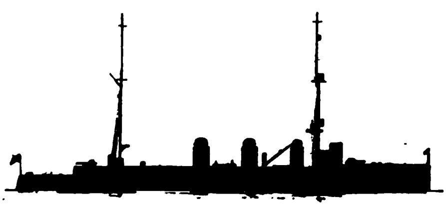


ITALY. Light Cruiser. Ancona (*ex-German* Graudenz). (See p. 282.)

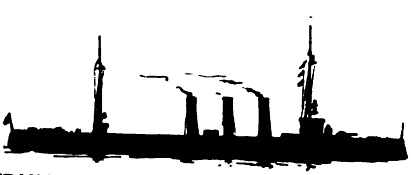


ITALY. Light Cruiser. Bari (*ex-German* Pillau). (See p. 282.)

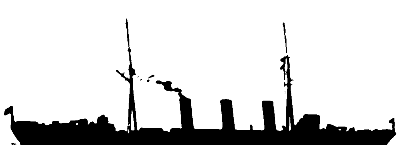
GREAT BRITAIN. Light Cruiser. Cleopatra. (See p. 266.)



ITALY. Scout Cruiser. Quarto. (See p. 283.)



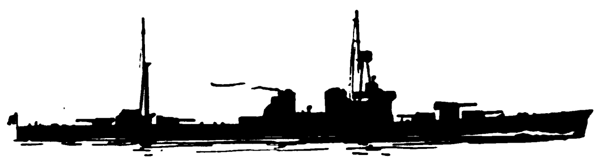
FRANCE. Light Cruiser. Colmar (*ex-German* Kolberg)



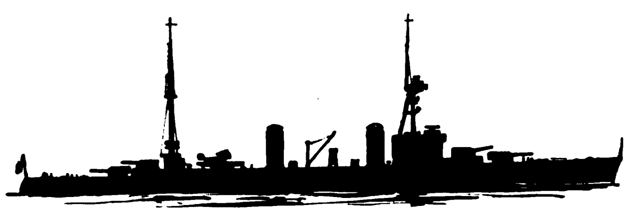
JAPAN. Second Class Cruiser. Tone. (See p. 287.)

GREAT BRITAIN. Light Cruisers. Effingham, Frobisher, Hawkins, Vindictive. (See pp. 268 and 269.)

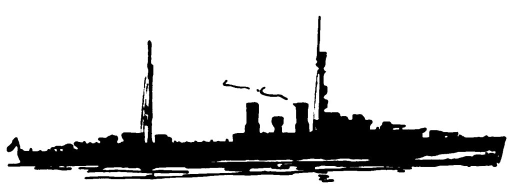
ITALY. Cruisers. Trento, Trieste. (See p. 282.)



JAPAN. Cruisers. Furutaka, Kako, Aoba, Kinugasa. (See p. 286.)



FRANCE. Cruisers. Duquesne, Tourville. (See p. 278.)

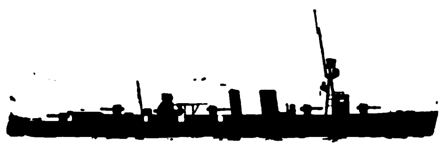


GERMANY, Light Cruiser. Emden,

GREAT BRITAIN. Light Cruisers. Danae, Dauntless, Delhi, Dunedin, Dragon, Durban. (See pp. 267 and 268.)

GREAT BRITAIN. Light Cruisers. Cardiff, Ceres, Coventry, Curacoa, Curlew. (See p. 267.)

GREAT BRITAIN. Light Cruisers. Cairo, Calcutta, Cape Town, Carlisle, Colombo. (See p. 266.)



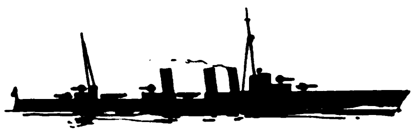
GREAT BRITAIN. Light Cruisers. Caledon, Calypso, Caradoc (See p. 266.)

GREAT BRITAIN. Light Cruisers. Cambrian, Canterbury, Castor, Constance. (See p. 267.)

GREAT BRITAIN. Cruisers. Courageous, Glorious. (See p. 266.)
These vessels are being reconstructed as aircraft-carriers.

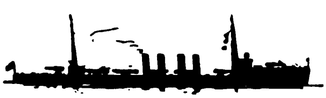
JAPAN. Light Cruiser. Yubari. (See p. 287.)

TORPEDO BOAT DESTROYERS.



FRANCE. Flotilla Leaders. Jaguar, Panthére, Leopard, Lynx, Chacal, Tigre. (See p. 311.)

ITALY. Flotilla Leaders. Leone, Pantera, Tigere. (See p. 314.)



UNITED STATES. Torpedo Boat Destroyers. Allen, Alywin, Conyngham. (See p. 325.)

JAPAN. Torpedo Boat Destroyer. Amatsukaze. (See p. 316.)

UNITED STATES. Torpedo Boat Destroyer. Clemson. (See p. 324.)

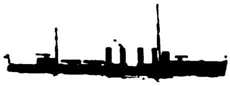
UNITED STATES. Torpedo Boat Destroyer. Caldwell. (See p. 325.)

FRANCE. Torpedo Boat Destroyers. Aventurier, Intrépide, Téméraire. (See p. 312.)

FRANCE. Torpedo Boat Destroyers. Algérien, Annamite, Arabe, Bambara. Hova, Kabyle, Marocain, Sakalave, Sénégalais, Somali, Tonkinois, Touareg. (See p. 312.)

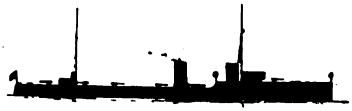
FRANCE. Torpedo Boat Destroyers. Enseigne Roux, Mécanicien Principal Lestin. (See pp. 311 and 312.)

JAPAN. Torpedo Boat Destroyer. Kaba. (See p. 316.)



FRANCE. Torpedo Boat Destroyers. Bouclier, Casque, Cimeterre. (See p. 311.)

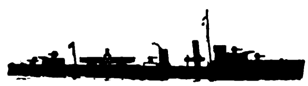
ITALY. Torpedo Boat Destroyers. Angelo Bassini, E. Cosenz, Francesco Stocco, Giacinto Carini, Giacoma Medici, Giovanni G. Acerbi, Giuseppe la Farina, Giuseppe la Masca, Giuseppe Sirtori, Nicola Fabrizi, Vincenzo G. Orsini. (See p. 314.)



ITALY. Torpedo Boat Destroyer. Carlo Mirabello.

GREAT BRITAIN. Torpedo Boat Destroyer. Broke. (See p. 305.)

GREAT BRITAIN. Torpedo Boat Destroyers. Vansittart, Venomous, Verity, Volunteer, Wanderer, Whitehall, Whitshed, Wild Swan, Wishart, Witch, Wren. (See p. 306.)



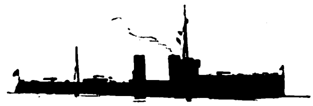
GREAT BRITAIN. Torpedo Boat Destroyers. Vancouver, Vanessa, Vanity, Vanoc, Vanquisher, Vectis, Vega, Velox, Vendetta, Venetia, Venturous, Verdun, Versatile, Vesper, Vidette, Vimiera, Violent, Vivacious, Vivien, Vortigern. (See pp. 306 and 307.)

GREAT BRITAIN. Torpedo Boat Destroyers. Viceroy, Viscount, Voyager, Wakeful, Walker, Walpole, Walrus, Warwick, Watchman, Waterhen, Wessex, Westcott, Westminster, Whirlwind, Whitley, Winchelsea, Winchester, Wolfhound, Wolsey, Woolston, Wrestler, Wryneck. (See pp. 306 & 307.)

GREAT BRITAIN. Destroyers. Ambuscade, Amazon. (See p. 305.)

JAPAN. Torpedo Boat Destroyer. Momo. (See p. 316.)

ITALY. Torpedo Boat Destroyer. Quintino Sella. (See p. 314.)

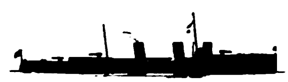


ITALY. Torpedo Boat Destroyer. Alessandro Poerio. (See p. 314.)

ITALY. Torpedo Boat Destroyer. Nazario Sauro.

GREAT BRITAIN. Torpedo Boat Destroyers. Tower, Trenchant, Ulster, Umpire, Undine, Urchin, Ursa, Ursula. (See p. 306.)

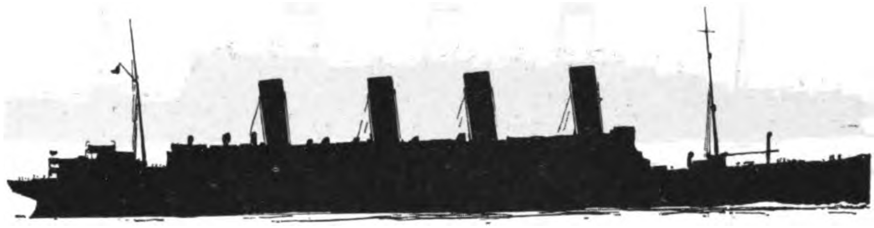
GREAT BRITAIN. Torpedo Boat Destroyers. Shikari, Simoom, Tasmania, Tattoo. (See pp. 305 and 306.)



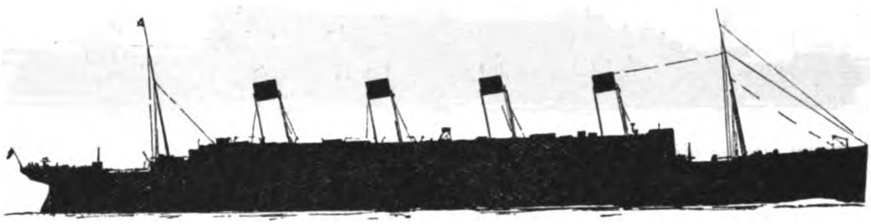
ITALY. Torpedo Boat Destroyer. Palestro. (See p. 315.)

ITALY. Torpedo Boat Destroyer. Turbine. (See p. 314.)

MERCHANT SHIPS.



AQUITANIA. Cunard. Length, 868 ft. 7 ins.; Gross Tonnage, 45,847; Funnels: Red, Black Tops.

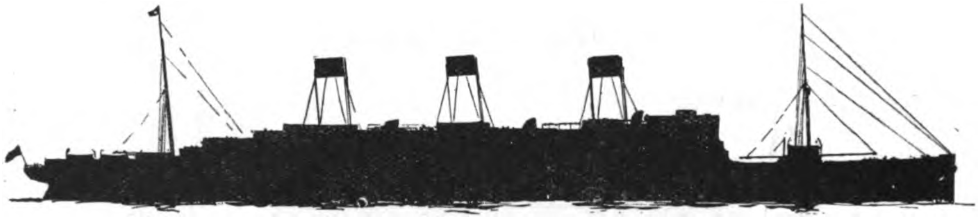


OLYMPIC. White Star. Length, 852 ft. 5 ins.; Gross Tonnage, 46,439; Funnels: Buff, Black Tops.

MAURETANIA. Cunard. Length, 762 ft. 2 ins.; Gross Tonnage, 30,696; Funnels: Red, Black Tops.

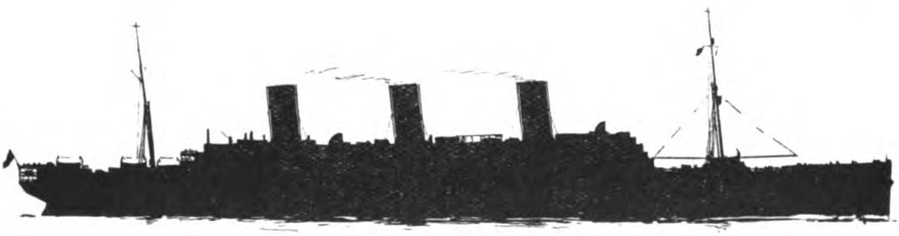
FRANCE. Cie. Générale Transatlantique. Length, 689 ft. 2 ins.; Gross Tonnage, 23,666; Funnels: Red, Black Tops.

ARUNDEL CASTLE. WINDSOR CASTLE. Union Castle. Length, 630 ft. 5 ins.; Gross Tonnage, 18,960; Funnels: Red, Black Tops.



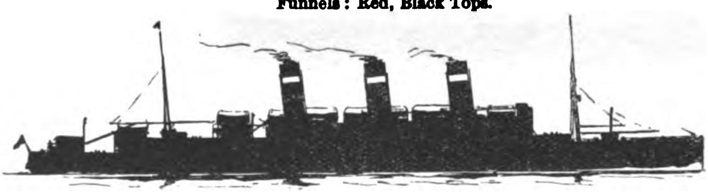
MAJESTIC. White Star. Length, 915 ft. 5 ins.; Gross Tonnage, 56,551; Funnels: Buff, Black Tops.

LEVIATHAN. United States Shipping Board. Length, 907 ft.; Gross Tonnage, 59,957; Funnels: Red, White Band, Blue Tops.



BERENGARIA. Cunard. Length, 883 ft. 6 ins.; Gross Tonnage, 52,226; Funnels: Red, Black Tops.

PARIS. Cie. Générale Transatlantique. Length, 735 ft. 4 ins.; Gross Tonnage, 34,569; Funnels: Red, Black Tops.



BELGENLAND. Red Star Line. Length, 697 ft.; Gross Tonnage, 27,132; Funnels: Black, White Band.

CAP POLONIO. Hamburg South Amerika. Length, 637·7 ft.; Gross Tonnage, 20,576; Funnels: White, Red Tops.

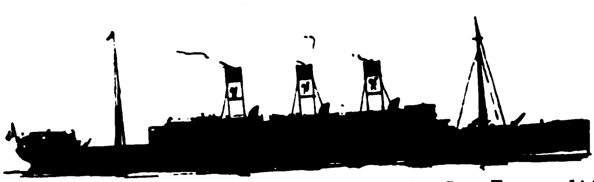
EMPRESS OF CANADA. Canadian Pacific. Length, 627 ft.; Gross Tonnage, 21,517;
Funnels: Yellow.

RELIANCE. Hamburg-Amerika Line. Length, 592 ft.; Gross Tonnage, 19,582;
Funnels: Yellow.

EMPRESS OF AUSTRALIA. Canadian Pacific. Length, 589 ft. 8 ins.; Gross Tonnage, 21,861;
Funnels: Yellow.

NALDERA. Peninsular and Oriental. Length, 580 ft. 9 ins.; Gross Tonnage, 15,825;
NARKUNDA. „ „ „ Length, 581 ft. 4 ins.; Gross Tonnage, 16,118.
Funnels: Black.

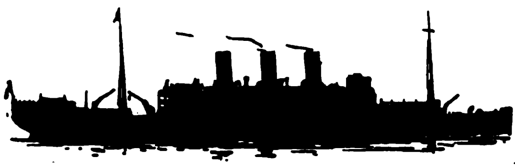
MASSILIA. Cie. Sud Atlantique. Length, 579 ft.; Gross Tonnage, 15,147;
Funnels: Buff, Black Tops. Cockerel on sides.



LUTETIA. Cie. Sud Atlantique. Length, 579 ft.; Gross Tonnage, 14,654;
Funnels: Buff, Black Tops. Cockerel on side.

EMPRESS OF ASIA. EMPRESS OF RUSSIA. Canadian Pacific.
Length, 570 ft. 1 in. Gross Tonnage, 16,909;
Funnels: Yellow.

TRANSYLVANIA. CALEDONIA. Anchor Henderson.
Length, 550 ft ; Gross Tonnage, 17,000;
Funnels: Black.



CHAMPOLLION. Messageries Maritimes.
Length, 508 ft. 6 ins.; Gross Tonnage 12,500 ;
Funnels: Black.

TAIREA. TAKLIWA. TALAMBA. British India S.N. Co.
Length, 449 ft. 6 ins.; Gross Tonnage. 8,000;
Funnels: Black, Two White Bands, Black Top

PRINCESS KATHLEEN. PRINCESS MARGUERITE. Canadian Pacific.
Length, 350 ft.; Gross Tonnage, 6,000;
Funnels: Yellow.

CIUDAD DE BUENOS AIRES. Argentine S.N. Co. CIUDAD DE MONTE VIDEO. Uruguayan S.N. Co. Length, 350 ft.; Gross Tonnage, 3,864 ;
Funnels: Yellow, Black Tops.

ADRIATIC. White Star. Length, 709 ft. 2 ins.; Gross Tonnage, 24,541; Funnels: Buff, Black Tops.

GEORGE WASHINGTON. United States Shipping Board. Length, 699 ft.; Gross Tonnage, 23,788; Funnels: Red, White Band, Blue Top. U.S.A. shield on side.

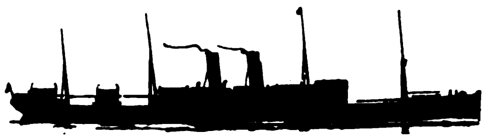
CEDRIC. CELTIC. White Star. Length, 680 ft. 9 ins.; Gross Tonnage, 21,073; Funnels: Buff, Black Tops.

EMPRESS OF SCOTLAND. Canadian Pacific. Length, 677 ft.; Gross Tonnage, 25,128; Funnels: Yellow.

LAPLAND. Red Star Line. Length, 605 ft.; Gross Tonnage, 18,565; Funnels: Black, White Band.

ALBERT BALLIN. DEUTSCHLAND. Hamburg Amerika Line. Length, 602 ft. 6 ins. Gross Tonnage, 20,815; Funnels: Yellow.

FINLAND. KROONLAND. International Mercantile Marine Co. Length, 560 ft.; Gross Tonnage, 12,230; Funnels: Black, White Band.



LATVIA. Det Ostasiatiske Kompagnie Akties. Length, 475 ft.; Gross Tonnage, 8,332; Funnels: Yellow.

HOMERIC. White Star. Length, 751 ft.; Gross Tonnage, 34,351; Funnels: Buff, Black Tops.

ORAMA. ORONSAY. OTRANTO. Orient. Length, 658 ft.; Gross Tonnage, 20,000; Funnels: Cream.

M.V. ASTURIAS. Royal Mail Steam Packet Co. Length, b.p., 655 ft. 8 ins.; Gross Tonnage, 22,000 tons; Funnels: Buff.

CONTE BIANCAMANO. Lloyd Sabaudo. Length, 655 ft.; Gross Tonnage, 23,000; Funnels: Yellow, White Band between Two Narrow Green.

CARONIA. **Cunard.** Length, 650 ft.; Gross Tonnage, 19,687;
Funnels: Red, Black Tops.

ROTTERDAM. **Holland Amerika.** Length, 650 ft.; Gross Tonnage, 24,149;
Funnels: Buff, Two Blue Bands with White Band between, Buff Top.

M.V. CARNARVON CASTLE. **Union Castle Line.** Length, 629 ft.; Tonnage, 22,000;
Funnels: Red, Black Top.

GIULIO CESARE. **Navigazione Generale Italiana.** Length, 626 ft.; Gross Tonnage, 21,657;
Funnels: Black, Broad White Band.

MOOLTAN. **MALOJA.** **Peninsular and Oriental.** Length, 625 ft.; Gross Tonnage, 20,847;
Funnels: Black.

HAMBURG. **Hamburg Amerika Line.** Length, 602 ft.; Gross Tonnage, 20,815;
Funnels: Yellow

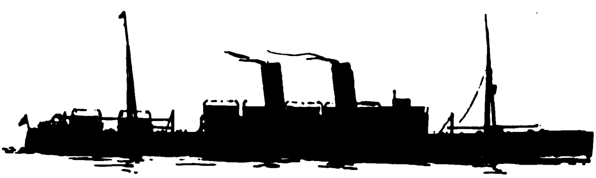
REGINA. White Star—Leyland Line. Length, 600 ft.; Gross Tonnage, 16,500;
Funnels: White Star Colours, Buff, Black Tops.

MONTNAIRN. Canadian Pacific. Length, 590 ft.; Gross Tonnage, 17,282;
Funnels: Yellow.

OHIO. Royal Mail Steam Packet Co. Length, 588 ft. 8 ins.; Gross Tonnage, 18,000;
Funnels: Buff.

ORMONDE. Orient. Length, 580 ft. 5 ins.; Gross Tonnage, 14,853;
Funnels: Cream.

M.S. AORANGI. Union Steam Ship Co. of N.Z. Length, 580 ft.; Gross Tonnage, 17,500
Funnels: Red, Black Tops.



VEENDAM. VOLENDAM. Holland America Line. Length, 576 ft.; Gross Tonnage, 15 434;
Funnels: Buff, White Band between Two Green.

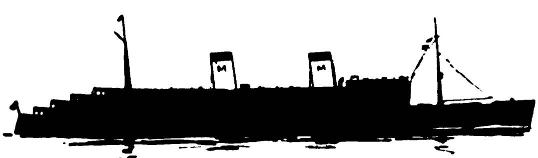
SAXON. **Union Castle.** Length, 570 ft. 5 ins.; Gross Tonnage, 12,385;
Funnels: Red, Black Tops.

CONTE ROSSO. **CONTE VERDE.** **Lloyd Sabaudo.** Length, 570 ft. 2 ins.;
Gross Tonnage, 17,048;
Funnels: Yellow, White Band between Two Narrow Green.

ARMADALE CASTLE. **Union Castle.** Length, 570 ft. 1 in.; Gross Tonnage, 12,973;
Funnels: Red, Black Tops.

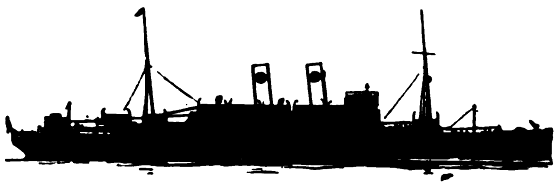
BALMORAL CASTLE. **EDINBURGH CASTLE.** **Union Castle.**
Length, 520 ft.; Gross Tonnage, 13,361;
Funnels: Red, Black Tops.

ROCHAMBEAU. **Cie. Générale Transatlantique.** Length, 559 ft.; Gross Tonnage, 17,400;
Funnels: Red, Black Tops.



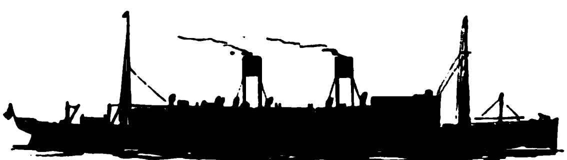
MALOLO. **Matson Line.** Length, 554 ft.; Gross Tonnage, 17,200;
Funnels: Yellow, Black Tops, "M" on sides.

ORMUZ. Orient. Length, 550 ft.; Gross Tonnage, 14,588; Funnels: Cream.



M.S. GRIPSHOLM. Swedish American Line. Length, 550 ft.; Gross Tonnage, 17,000; Funnels: Yellow, Blue Discs on Sides.

DE GRASSE. Cie. Générale Transatlantique. Length, 550 ft.; Gross Tonnage, 17,000; Funnels: Red, Black Tops.



TENYO MARU. SHINYO MARU. Toyo Kisen Kaisha. Length, 550 ft.; Gross Tonnage, 13,400. Funnels: Yellow, Black Top.

MONTCALM. MONTCLARE. MONTROSE. Canadian Pacific. Length, 549 ft. 5 ins.; Gross Tonnage, 16,418; Funnels: Yellow.

MONTROYAL. Canadian Pacific. Length, 548 ft. 8 ins.; Gross Tonnage, 15,857; Funnels: Yellow.

RAJPUTANA. RANCHI. RAWALPINDI. **Peninsular and Oriental.** Length, 547 ft.; Gross Tonnage, 16,100; Funnels: Black.

D'ARTAGNAN. **Messageries Maritimes.** Length, 541 ft.; Gross Tonnage, 13,950. Funnels: Black.

MALWA. MANTUA. MOREA. **Peninsular and Oriental.** Length, 540 ft.; Gross Tonnage, 10,941; Funnels: Black.

GELRIA. **Koninklijke Hollandsche Lloyd.** Length, 540 ft.; Gross Tonnage, 13,868; Funnels: Yellow, Black Band.

ORSOVA. **Orient.** Length, 536 ft. 2 ins.; Gross Tonnage, 13,036; Funnels: Cream.

ORVIETO. **Orient.** Length, 535 ft. 8 ins.; Gross Tonnage, 12,133; Funnels: Cream.

OSTERLEY. **Orient.** Length, 535 ft. ; Gross Tonnage, 12,129 ;
Funnels : Cream.

STAVANGERFJORD. **Norske Amerikalinje.** Length, 552 ft. Gross Tonnage, 12,977 ;
Funnels : Yellow, Two Red and Two White Bands with Blue Band between.

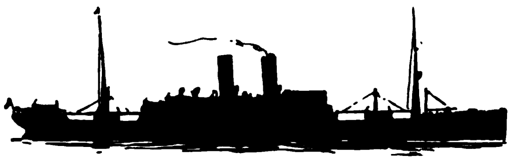
VASCO NUNEZ DE BALBOA. **Compañia Trasatlantica.** Length, 531 ft. ;
Gross Tonnage, 7,842 ;
Funnels : Black.

MACEDONIA. **Peninsular and Oriental.** Length, 530 ft. 4 ins. ; Gross Tonnage, 11,089 ;
Funnels : Black.

ANDRE LEBON. **Messageries Maritimes.** Length 528 ft. ; Gross Tonnage, 13,681 ;
Funnels : Black.

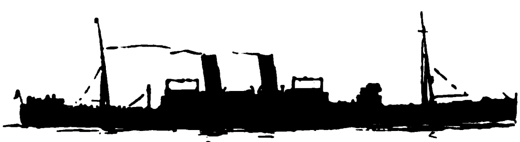
CATHAY. CHITRAL. COMORIN. **Peninsular and Oriental.** Length, 525 ft. ;
Gross Tonnage, 15,000 ;
Funnels : Black.

NIAGARA. Union Steam Ship Co. of N.Z. Length, 524 ft. 7 ins.; Gross Tonnage, 13,415;
Funnels: Red, Black Tops.



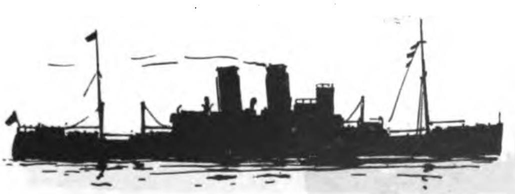
FREDERIK VIII. Det Forenede Damskibs Selskab. Length, 528 ft.;
Gross Tonnage, 11,850;
Funnels: Black, Red Band.

KAISER-I-HIND. Peninsular and Oriental. Length, 520 ft.; Gross Tonnage, 11,430;
Funnels: Black.



MINNEDOSA. Canadian Pacific. Length, 520 ft.; Gross Tonnage, 14 000;
Funnels: Yellow.

BERGENSFJORD. Norske Amerikalinje. Length, 512 ft.; Gross Tonnage, 10,709;
Funnels: Yellow, Two Red and Two White Bands with Blue Band between



ALMEDA. AVILA. Blue Star Line. Length, 510 ft.; Gross Tonnage, 14,000;
Funnels: Red, Black Tops, White Band on Black,
Blue Star on White Disc on Red.

H. F. ALEXANDER. Admiral Line. Length, 509 ft. Gross Tonnage, 8,255 ; Funnels : Tan, Black Top, White Disc with Flag.

CHICAGO. Cie. Générale Transatlantique. Length, 508 ft. ; Gross Tonnage, 14,250 ; Funnels : Red, Black Tops.

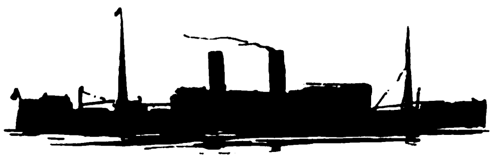
PAUL LECAT. Messageries Maritimes. Length, 508 ft. ; Gross Tonnage, 12,388 . Funnels : Black.

METAGAMA. Canadian Pacific. Length, 500 ft. 4 ins. ; Gross Tonnage, 12,420 ; Funnels : Yellow.

RASMAK. Peninsular and Oriental. Length, 500 ft. ; Gross Tonnage, 10,000 ; Funnels : Black.

CHINA. Peninsular and Oriental. Length, 500 ft. 5 ins. ; Gross Tonnage, 7,952 ; Funnels : Black.

ALFONSO XII. **Compañia Trasatlantica.** Length, 481 ft. 4 ins.; Gross Tonnage, 6,743; Funnels: Black.

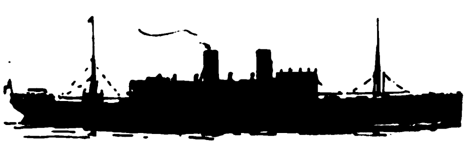


PATRIA. **Wm. Ruys & Zonen.** Length, 480 ft.; Gross Tonnage, 9,891; Funnels: Black.

SPHINX. **Messageries Maritimes.** Length, 479 ft.; Gross Tonnage, 11,374; Funnels: Black.

PRESIDENTE WILSON. **Cosulich Line.** Length, 477 ft. 5 ins.; Gross Tonnage, 12,578; Funnels: Red, White Band, Black Top.

PORTHOS. **Messageries Maritimes.** Length, 476 ft.; Gross Tonnage, 12,691; Funnels: Black.

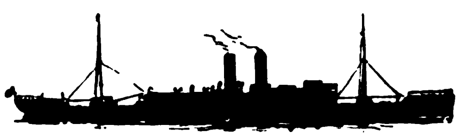


CUBA. **Cie. Générale Transatlantique.** Length, 476 ft.; Gross Tonnage, 11,400; Funnels: Red, Black Tops.

FLANDRIA. ORANIA. Koningen Hollandsche Lloyd. Length, 470 ft.; Gross Tonnage, 9,673; Funnels: Yellow, Black Band.

MARTHA WASHINGTON. Cosulich Line. Length, 459 ft.; Gross Tonnage, 8,347; Funnels: Red, White Band, Black Top.

TALMA. TILAWA. British India S.N. Co. Length, 450 ft.; Gross Tonnage, 10,000; Funnels: Black, Two White Bands, Black Top.



PEROU. Cie. Générale Transatlantique. Length, 449 ft.; Gross Tonnage, 6,600; Funnels: Red, Black Tops.

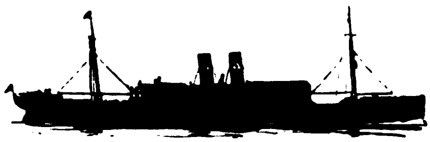
DE LA SALLE. Cie. Générale Transatlantique. Length, 440 ft.; Gross Tonnage, 8,400; Funnels: Red, Black Tops.

SINAIA. Cyp. Fabre. Length, 440 ft.; Gross Tonnage, 8,666.

ASIE. Chargeurs Reunis. Length, 439 ft.; Gross Tonnage, 9,059; Funnels: Yellow, Red Stars on White Band.

M.S. THÉOPHILE GAUTIER. Messageries Maritimes Length, 425 ft.; Gross Tonnage, 9,000; Funnels: Black.

HAYTI. Cie. Générale Transatlantique. Length, 410 ft. ; Gross Tonnage, 6,179 ;
Funnels : Red, Black Tops.



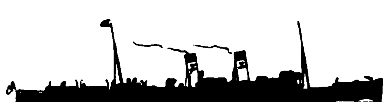
M.S. RIO BRAVO. M.S. RIO PANUCO. Flensburger Dampfer Co. (H. Schuldt).
Length, 410 feet ; Gross Tonnage, 6,000 ;
Funnels : Black, Blue Band, White Diamond with Red S.

NAGASAKA MARU. SHANGHAI MARU. Nippon Yusen Kaisha. Length, 402 ft. ;
Gross Tonnage, 5,272 ;
Funnels : Black.

ARANKOLA. British India S.N. Co. Length, 390 ft. 3 ins. ; Gross Tonnage, 4,129 ;
Funnels : Black, Two White Bands, Black Tops.

CAMBRIA. HIBERNIA. SCOTIA. London, Midland and Scottish Railway.
Length, 380 ft. 5 ins. ; Gross Tonnage, 3,460 ;
Funnels : Yellow, Black Tops.

WAHINE. Union Steam Ship Co. of N.Z. Length, 375 ft. ; Gross Tonnage, 4,436 ;
Funnels : Red, Black Tops.

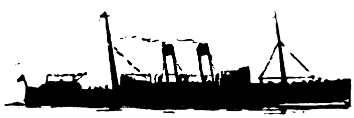


KEIFUKU MARU. SHOKEI MARU. TOKUJU MARU. Imperial Japanese Railway.
Length, 375 ft. ; Gross Tonnage, 5,857 ;
Funnels : Yellow, Black Top, Red I on Yellow.

GOUVERNEUR GENERAL CHANZY. GOUVERNEUR GENERAL GREVY. DE QUEYDON. JONNART. French Government. Length, 361 ft.; Gross Tonnage, 4,500.

ST. ANDREW. ST. DAVID. ST. PATRICK. Great Western Railway.
Length, 351 ft. 1 in.; Gross Tonnage, 2,495;
Funnels: Red, Black Tops.

MENEVIA. London, Midland and Scottish Railway. Length, 329 ft.
Gross Tonnage, 1,872;
Funnels: Yellow, Black Tops.

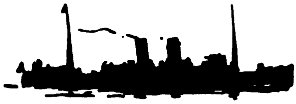


ANTWERP. MALINES. London and North Eastern Railway. Length, 321 ft. 6 ins.;
Gross Tonnage, 2,957;
Funnels: Yellow, Black Tops.

CURRAGHMORE. London, Midland and Scottish Railway. Length, 307 ft. 1 in.;
Gross Tonnage, 1,587;
Funnels: Yellow, Black Tops.

GREENORE. London, Midland and Scottish Railway. Length, 306 ft.
Gross Tonnage, 1,488;
Funnels: Yellow, Black Tops.

RATHMORE. London, Midland and Scottish Railway. Length, 299 ft. 5 ins.;
Gross Tonnage, 1,569;
Funnels: Yellow, Black Tops.



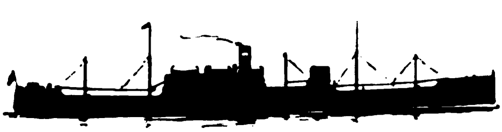
ST. HELIER. ST. JULIEN. Great Western Railway. Length, 290 ft.; Gross Tonnage, 2,000; Funnels: Red, Black Top.

HANTONIA. NORMANNIA. Southern Railway. Length, 290 ft. 3 ins. Gross Tonnage, 1,567; Funnels: Buff.

REINDEER. Great Western Railway. Length, 280 ft.; Gross Tonnage, 1,101; Funnels: Red, Black Tops.

DIEPPE. Southern Railway. Length, 273 ft. 5 ins.; Gross Tonnage, 1,228; Funnels: White, Black Tops.

ROTORUA. New Zealand Shipping Co. Length, 526 ft. 6 ins.; Gross Tonnage, 12,184; Funnel: Buff.

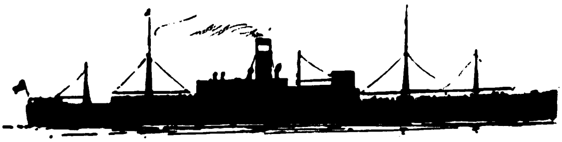


PRESIDENT ADAMS.	Dollar	Steamship	Line.	Length, 502 ft.;	Gross Tonnage,	10,558;
PRESIDENT GARFIELD.	,,	,,	,,	,,	,,	10,558;
PRESIDENT HARRISON.	,,	,,	,,	,,	,,	10,533;
PRESIDENT HAYES.	,,	,,	,,	,,	,,	10,533;
PRESIDENT MONROE.	,,	,,	,,	,,	,,	10,533;
PRESIDENT POLK.	,,	,,	,,	,,	,,	10,533;
PRESIDENT VANBUREN.	,,	,,	,,	,,	,,	10,533;

Funnel: Black, White $ on Red Band.

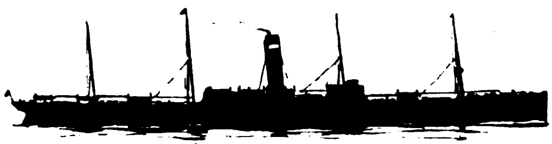
BARONESA. Furness (Houlder). Length, 431 ft.; Gross Tonnage, 8,663; Funnel: Black, Red Band, White Maltese Cross, Black Top.

NIEUW AMSTERDAM. **Holland Amerika.** Length, 615 ft.; Gross Tonnage, 17,149; Funnel: Buff, White Band between Two Green.



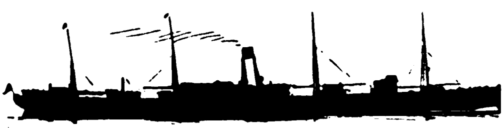
PRESIDENT ROOSEVELT. **United States Shipping Board.** Length, 535 ft.; Gross Tonnage, 14,127; Funnel: Red, White Band, Blue Top, U.S.A. Shield on side.

PRESIDENT LINCOLN. PRESIDENT CLEVELAND. PRESIDENT PIERCE. PRESIDENT TAFT. PRESIDENT WILSON. Dollar Steamship Line. Funnel: Black, White $ on Red Band.

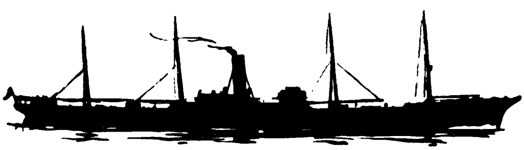


HAVERFORD. **Internation Mercantile Marine Co.** Length, 531 ft.; Gross Tonnage, 11,635; Funnel: Black, White White Band.

M.S. SHROPSHIRE. **Bibby Line.** Length, 502 ft.; Gross Tonnage, 10,000; Funnel: Salmon Pink, Black Top.



ATHENIC. **Shaw, Savill, and Albion Co.** Length, 500 ft. 8 ins.; Gross Tonnage, 12,366; Funnel: Buff, Black Top.



COLONIA. **Telegraph Construction and Maintenance Co.** Length, 487 ft.; Gross Tonnage, 8,010; Funnel: Yellow.

YORKSHIRE. Bibby Line. Length, 482 ft. 4 ins.; Gross Tonnage, 10,250; Funnel: Salmon Pink, Black Top.

LANCASHIRE. Bibby Line. Length, 482 ft. 4 ins.; Gross Tonnage, 9,445; Funnel: Salmon Pink, Black Top.

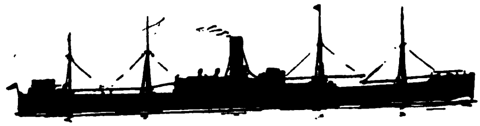
DIPLOMAT. Harrison Line. Length, 482 ft.; Gross Tonnage, 8,218; Funnel: Black, Red Band between Two White.

MENOMINEE. Atlantic Transport. Length, 475 ft.; Gross Tonnage, 6,919; Funnel: Red, Black Top.

DOMINIA. Telegraph Construction and Maintenance Co. Length, 475 ft; Gross Tonnage, 9,250; Funnel: Yellow.

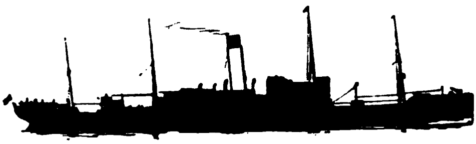
OXFORDSHIRE. Bibby Line. Length, 474 ft. 7 ins.; Gross Tonnage, 8,624; Funnel: Salmon Pink, Black Top

WARWICKSHIRE. Bibby Line. Length, 470 ft. 3 ins.; Gross Tonnage, 8,012; Funnel: Salmon Pink, Black Top.



LEITRIM. Union Steam Ship Co. of N.Z. Length, 470 ft.; Gross Tonnage, 9,540; Funnel: Red, Black Top.

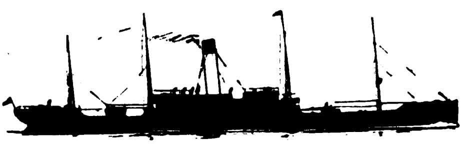
GLOUCESTERSHIRE. Bibby Line. Length, 467 ft. 2 ins.; Gross Tonnage, 8,124; Funnel: Salmon Pink, Black Top.



LEICESTERSHIRE. Bibby Line. Length, 467 ft. 2 ins.; Gross Tonnage, 8,059; Funnel: Salmon Pink, Black Top.

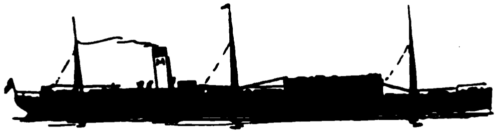
COLLEGIAN. Harrison Line. Length, 455 ft.; Gross Tonnage, 5,850; Funnel: Black, Red Band between Two White.

HEREFORDSHIRE. Bibby Line. Length, 452 ft. 8 ins.; Gross Tonnage, 7,192; Funnel: Salmon Pink, Black Top.

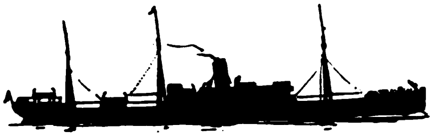


DERBYSHIRE. Bibby Line. Length, 452 ft.; Gross Tonnage, 6,776; Funnel: Salmon Pink, Black Top.

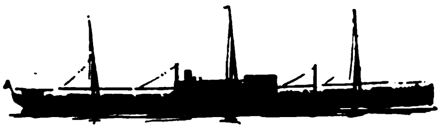
HYACINTHUS. HYPATIA. Houston Line. Length, 452 ft.; Gross Tonnage, 5,725; Funnel: Red, Black Top, Two Black Bands.



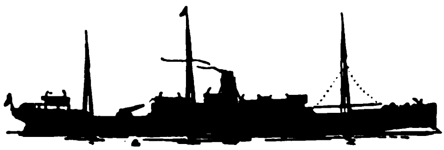
MAUI. Matson Navigation Co. Length 484 ft.; Gross Tonnage, 9,801; Funnel: Yellow, Black Top, with "M."



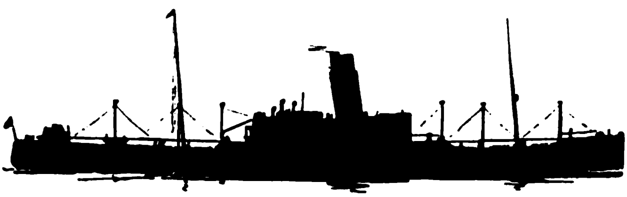
MANUEL CALVO. Compañia Trasatlantica. Length 435 ft.; Gross Tonnage, 5,617; Funnel: Black.



M.S. BALBOA. M.S. BUENOS AIRES. M.S. CANADA. Axel Axelson Johnson. Length, 426 ft.; Gross Tonnage, 5,455.



MONTEVIDEO. Compañia Trasatlantica. Length, 422 ft.; Gross Tonnage, 5,206; Funnel: Black.



MINNETONKA. MINNEWASKA. Atlantic Transport. Length, 626 ft.; Gross Tonnage, 21,998; Funnel: Red, Black Top.

CARINTHIA. FRANCONIA. Cunard. Length, 600 ft.; Gross Tonnage, 20,158; Funnel: Red, Black Top.

LACONIA. SAMARIA. SCYTHIA. Cunard. Length, 600 ft.; Gross Tonnage, 20,158; Funnels: Red, Black Top.

LANCASTRIA. Cunard. Length, 578 ft. ; Gross Tonnage, 16,700 ;
Funnel : Red, Black Top.
CAMERONIA. Anchor Henderson. Length, 552 ft. 5 ins. ; Gross Tonnage, 16,280
Funnel : Black.

EURIPIDES. Aberdeen Line. Length, 570 ft. ; Gross Tonnage, 15,000 ;
Funnel : Ochre.

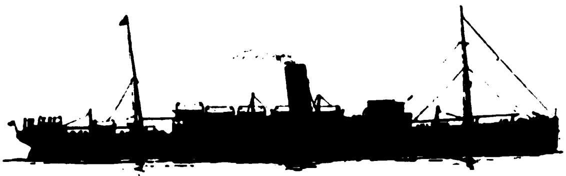
NESTOR. ULYSSES. Blue Funnel Line. Length, 563 ft. 2 ins. ; Gross Tonnage, 14,547 ;
Funnel : Blue, Black Top.

NOORDAM. RIJNDAM. Holland Amerika. Length, 560 ft. ; Gross Tonnage, 12,529 ;
Funnel : Buff, White Band between Two Green.

MEGANTIC. White Star. Length, 550 ft. 4 ins. ; Gross Tonnage, 14,878 ;
Funnel : Buff, Black Top.

ALMANZORA. Royal Mail Steam Packet Co. Length, 550 ft. 3 ins. ; Gross Tonnage, 16,034 ;
Funnel : Buff.

ORDUNA. **Royal Mail Steam Packet Co.** Length, 550 ft. 8 ins. ; Gross Tonnage, 15,499 ;
Funnel : Buff.

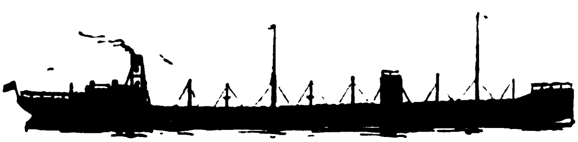


ORBITA. **Royal Mail Steam Packet Co.** Length, 550 ft. 8 ins. ; Gross Tonnage, 15,486 ;
Funnel : Buff.

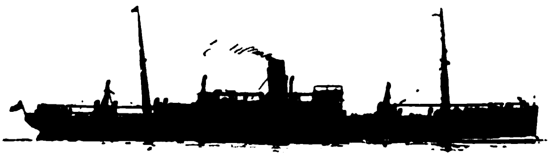
ORCA. **Royal Mail Steam Packet Co.** Length, 550 ft. ; Gross Tonnage, 16,063 ;
Funnel : Buff.

CALIFORNIA. **TUSCANIA.** **Anchor Henderson.** Length, 550 ft. ; Gross Tonnage, 17,250 ;
Funnel : Black.

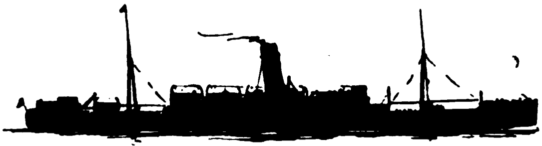
MOLDAVIA. **MONGOLIA.** **Peninsular and Oriental.** Length, 550 ft. ;
Gross Tonnage, 15,800 ;
Funnel : Black.



BETHORE. **Ore Steamship Co., N.Y.** Length, 550 ft. ; Gross Tonnage, 14,899 ;
Funnel : Grey, Blue and White Bands, White O.

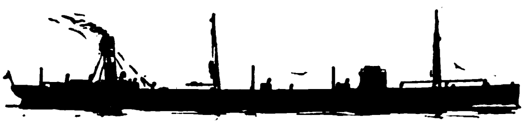


ESPERANCE BAY. HOBSONS BAY. JERVIS BAY. LARGS BAY. MORETON BAY.
Australian Commonwealth Line. Length, 548 ft.; Gross Tonnage, 16,500;
Funnels: Yellow.

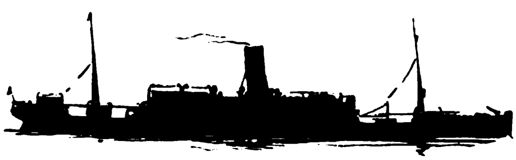


OROYA. Pacific Steam Navigation Co. Length, 547 ft.; Gross Tonnage, 14,000;
Funnel: Buff.

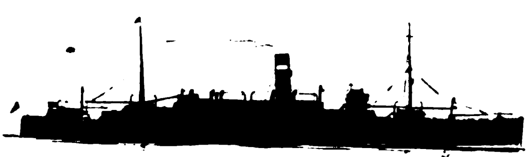
OROPESA. Pacific Steam Navigation Co. Length, 530 ft.; Gross Tonnage, 14,072;
Funnel: Buff.



SAN FRATERNO. SAN GREGORIO. SAN JERONIMO. SAN LORENZO. SAN MELITO.
SAN NAZARIO. SAN PATRICIO. Eagle Oil Transport Co.
Length, 527 ft. 3 ins.; Gross Tonnage, 11,929;
Funnel: Black, Yellow Band, Black Eagle, Black O on White Band, Yellow Band.



MARLOCH. Canadian Pacific. Length, 520 ft.; Gross Tonnage, 10,600;
Funnel: Yellow.



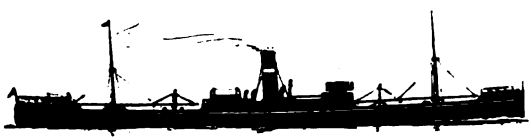
ATHENIA. LETITIA. Anchor-Donaldson. Length, 520 ft.; Gross Tonnage, 12,000;
Funnel: Black, White Band, Black Top.

BARADINE. Peninsular and Oriental. Length, 519 ft. 9 ins.; Gross Tonnage, 13,300; Funnel: Black.

DIOGENES. SOPHOCLES. Aberdeen Line. Length, 518 ft.; Gross Tonnage, 12,500; Funnel: Ochre.

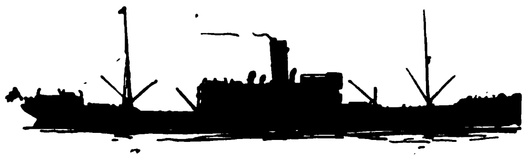
MANGALORE. MATHURA. Anchor Brocklebank. Length, 518 ft. Gross Tonnage, 9,751; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

MALANCHA. Anchor Brocklebank. Length, 518 ft.; Gross Tonnage, 10,572; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.



MACHARDA. Anchor-Brocklebank. Length, 518 ft.; Gross Tonnage, 10,464; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

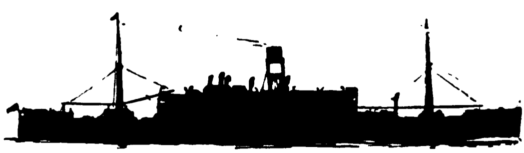
DROTTNINGHOLM. Swedish American Line. Length, 517 ft.; Gross Tonnage, 12,522; Funnel: Yellow, Blue Disc, Three Gold Crowns.



FUSHIMI MARU. SUWA MARU. Nippon Yusen Kaisha. Length, 516 ft.;
Gross Tonnage, 10,938;
Funnel: Black.

ARAQUAYA. Royal Mail Steam Packet Co. Length, 515 ft. 2 ins.; Gross Tonnage, 10,580;
Funnel: Buff.

ORCOMA. Pacific Steam Navigation Co. Length, 511 ft. 7 ins.; Gross Tonnage, 11,571;
Funnel: Buff.



VANDYCK. VOLTAIRE. Lamport and Holt. Length, 510 ft.; Gross Tonnage, 13,233;
Funnel: Blue, White Band, Black Top.

ACHILLES. PHILOCTETES. TYNDAREUS. Blue Funnel Line. Length, 507 ft.;
Gross Tonnage, 11,426;
Funnel: Blue, Black Top.

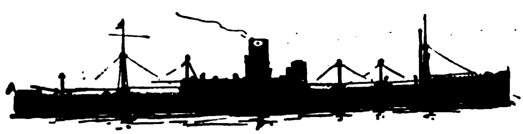
DEMOSTHENES. THEMISTOCLES. Aberdeen Line. Length, 506 ft. 6 ins.;
Gross Tonnage, 11,223;
Funnel: Ochre.

PORT MELBOURNE. PORT NAPIER. PORT SYDNEY. Commonwealth and Dominion Line. Length, 501 ft. 8 ins.; Gross Tonnage, 9,152; Funnel: Red, Black Top.

DARRO. DEMERARA. DESEADO. DESNA. Royal Mail Steam Packet Co. Length, 500 ft. 7 ins.; Gross Tonnage, 11,477; Funnel: Buff.

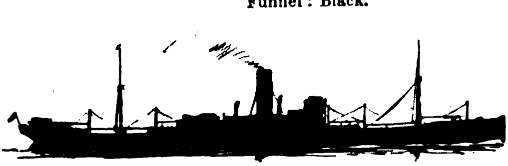
LLANSTEPHAN CASTLE. Union Castle Line. Length, 500 ft. 5 in.; Gross Tonnage, 11,293; Funnel: Red, Black Top.

BELTANA. BENALLA. BERRIMA. BORDA. Peninsular and Oriental. Length, 500 ft.; Gross Tonnage, 11,120; Funnel: Black.



FORDSDALE. Australian Commonwealth Line. Length, 500 ft.; Gross Tonnage, 9,674; Funnel: Yellow.

ALFONSO XIII. CRISTOBOL COLON. Compañia Trasatlantica. Length, 500 ft.; Gross Tonnage, 10,322; Funnel: Black.

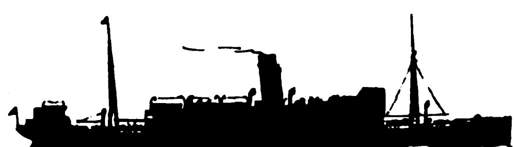


GLENIFFER. Glen Line. Length, 500 ft.; Gross Tonnage, 9,429; Funnel: Red, Black Top.

M.S. INDRAPOERA. Rotterdam Lloyd. Length, 500 ft.; Gross Tonnage, 10,500; Funnel: Black.

MAGDAPUR. MANIPUR. Anchor-Brocklebank Line. Length, 490 ft. 6 ins.; Gross Tonnage, 9,237; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

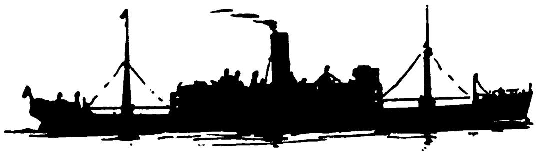
INFANTA ISABEL DE BORBON. Compañia Trasatlantica. Length, 498 ft.; Gross Tonnage, 10,348; Funnel: Black.



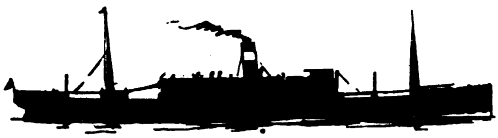
REINA VICTORIA EUGENIA. Compañia Trasatlantica. Length, 498 ft.; Gross Tonnage, 10,137; Funnel: Black.

HAKONE MARU. HAKOZAKI MARU. HARUNA MARU. Nippon Yusen Kaisha. Length, 495 ft.; Gross Tonnage, 10,420; Funnel: Black.

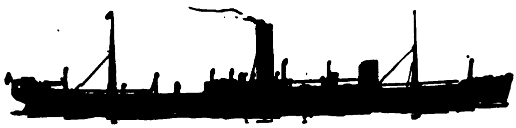
AENEAS. ANCHISES. ASCANUS. Blue Funnel Line. Length, 493 ft.; Gross Tonnage, 10,049; Funnel: Blue, Black Top.



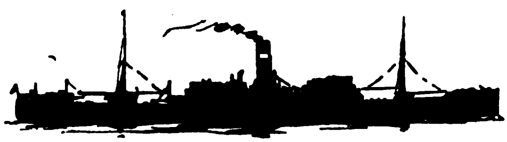
SARPEDON. **Blue Funnel Line.** Length, 491 ft.; Gross Tonnage, 11,400;
DARDANUS. ,, ,, Length, 459 ft.; Gross Tonnage, 7,900;
Funnel: Blue, Black Top.



CAXIAS. **Lloyd Brasileiro, Cie. de Nav.** Length, 491 ft.; Gross Tonnage, 9,791;
Funnel: Yellow, White Band.

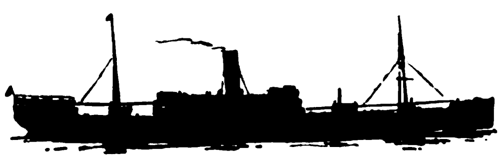


CALCHAS. **Blue Funnel Line.** Length, 490 ft. 8 ins.; Gross Tonnage, 10,304;
Funnel: Blue, Black Top.



CITY OF NAGPUR. **Ellerman City Line.** Length, 490 ft.; Gross Tonnage, 10,138;
Funnel: Buff, White Band, Black Top.

CITY OF EXETER. **Ellerman City Line.** Length, 486 ft. 7 ins.; Gross Tonnage, 9,447;
Funnel: Buff, White Band, Black Top.



REMUERA. **New Zealand Shipping Co.** Length, 485 ft.; Gross Tonnage, 11,276;
Funnel: Yellow.

M.S. GLENAPP. M.S. GLENBEG. M.S. GLENGARRY. M.S. GLENOGLE. Glen Line.
Length, 485 ft.; Gross Tonnage, 6,802;
Funnel: Red, Black Top.

M.S. DINTELDYK. Holland Amerika. Length, 485 ft.; Gross Tonnage, 8,400;
Funnel: Buff, Two Blue Bands, White between, Buff Top.

M.S. LOCHKATRINE. Royal Mail Steam Packet Co. Length, 485 ft.; Gross Tonnage, 9,409;
Funnel: Buff.

CITY OF PARIS. Ellerman City Line. Length, 484 ft. 7 ins.; Gross Tonnage, 10,245;
Funnel: Buff, White Band, Black Top.

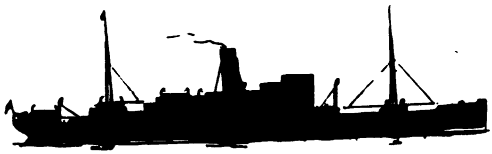
CEYLAN. MALTE. Chargeurs Réunis. Length, 483 ft.; Gross Tonnage, 9,000
Funnel: Yellow, Red Stars on White Band.

NIAGARA. Cie. Générale Transatlantique.
Funnel: Red, Black Top.

FORMOSE
GROIX } **Chargeurs Réunis.** Length, 481 ft. 6 ins.; Gross Tonnage, 10,500;
HOEDIC.
BELLE ISLE. " " " " " " 9,591;
AURIGNY. " " " " " " 9,589;
DESIRADE
EUBEE. } " " " " " " 9,580;
Funnel: Yellow, Red Stars on White Band.

FONTAINEBLEAU. COMPEIGNE.
CHANTILLY. } **Messageries Maritimes.**
Funnel: Black.

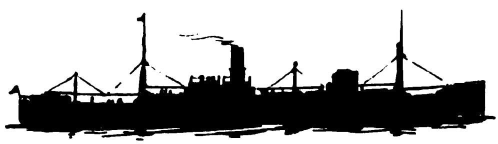
PORT ADELAIDE. PORT AUCKLAND. PORT BOWEN. PORT CAMPBELL. PORT CAROLINE. PORT DARWIN. PORT DENISON. PORT HUNTER. PORT KEMBLA. PORT NICHOLSON. Commonwealth and Dominion Line. Length, 481 ft. 2 ins.;
Gross Tonnage, 8,422;
Funnel: Red, Black Top.



MEDUANA. MOSELLA. Cie. Sud Atlantique. Length, 481 ft.; Gross Tonnage, 10,500; Funnel: Yellow, Black Top.

RUAHINE. New Zealand Shipping Co. Length, 480 ft. 7 ins.; Gross Tonnage, 10,839; Funnel: Yellow.

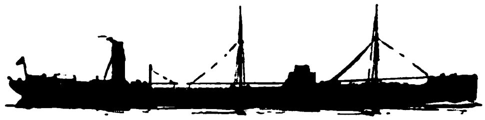
NEURALIA. NEVASA. British India S.N. Co. Length, 480 ft. 5 ins.; Gross Tonnage, 9,082; Funnel: Black, Two White Bands, Black Top.



TURAKINA. New Zealand Shipping Co. Length, 480 ft.; Gross Tonnage, 10,000; Funnel: Yellow.

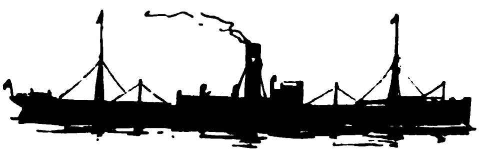
KASHGAR. KASHMIR. KALYAN. KARMALA. KHIVA. KHYBER. Peninsular and Oriental. Length, 479 ft. 9 ins.; Gross Tonnage, 8,840; Funnel: Black.

CITY OF SIMLA. Ellerman City Line. Length, 476 ft. 7 ins.; Gross Tonnage, 9,468; Funnel: Buff, White Band, Black Top.

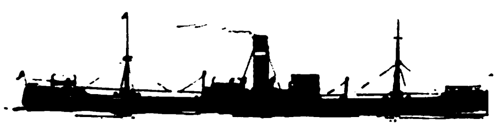


IROQUOIS. Anglo-American Oil Co. Length, 476 ft. 8 ins.; Gross Tonnage, 9,202
Funnel: Red, Black Top.

DUNLUCE CASTLE. DURHAM CASTLE. Union Castle.
Length, 475 ft. 5 ins.; Gross Tonnage, 8,130;
Funnel: Red, Black Top.



ARIZONA MARU. ALABAMA MARU. AFRICA MARU. MANILA MARU. HAWAII MARU. Osaka Shosen Kaisha. Length, 475 ft. Gross Tonnage, 9,500;
Funnel: Black, Two White Bands, joined at Side.



MAIDAN. MAHSUD. MAIHAR MALAKAND. MANAAR. MATHERAN.
Anchor-Brocklebank. Length, 470 ft. 4 ins.; Gross Tonnage, 8,077;
Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

DELTA. DEVANHA. DONGOLA. Peninsular and Oriental.
Length, 470 ft. 3 ins.; Gross Tonnage, 8,097;
Funnel: Black.

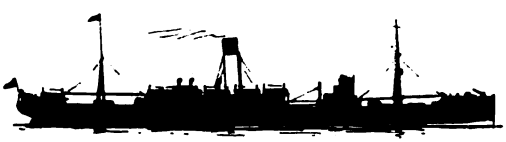
MALAKUTA. Anchor-Brocklebank. Length, 470 ft. 2 ins.; Gross Tonnage, 7,205;
Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

CALAMARES. **United Fruit Co.** Length, 470 ft. ; Gross Tonnage, 7,782;
PASTORES. „ „ „ Length, 470 ft. ; Gross Tonnage, 7,242;
Funnel : Buff, White Diamond on Red Band, Black Top.

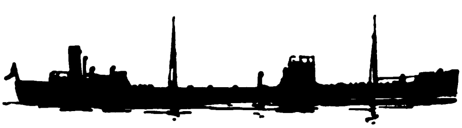
M.S. ACCRA. **Elder Dempster.** Length, 468 ft. ; Gross Tonnage, 12,000;
Funnel : Buff.

MADURA. MALDA. MANTOLA. MATIANA. **British India S.N. Co.** Length, 465 ft. 2 ins. ;
Gross Tonnage, 8,975 ;
Funnel: Black, Two White Bands, Black Top.

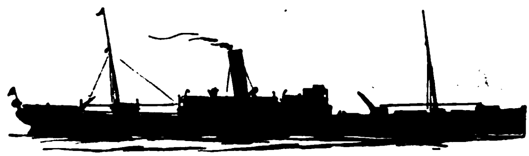
M.S. PORT DUNEDIN. M.S. PORT HOBART. **Commonwealth and Dominion Line.**
Length, 465 ft. ; Gross Tonnage, 7,506 ;
Funnel : Red, Black Top.



ARAWA. TAINUI. **Shaw, Savill, and Albion Co.** Length, 460 ft. ; Gross Tonnage, 9,372 ;
Funnel : Buff, Black Top.

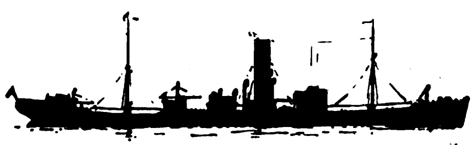


M.S. QUI FCREST. **Oil Tanker.** **Gulf Refining Co. of New York.** Length, 460 ft. ;
Gross Tonnage, 8,950.

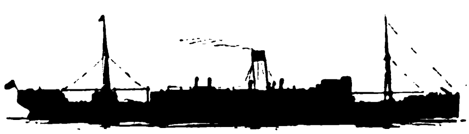


RIMUTAKA. RUAPEHU. New Zealand Shipping Co. Length, 457 ft. 6 ins.;
Gross Tonnage, 8,887;
Funnel: Yellow.

CITY OF LYONS. Ellerman Line. Length, 455 ft.; Gross Tonnage, 7,063;
Funnel: Buff, White Band, Black Top.

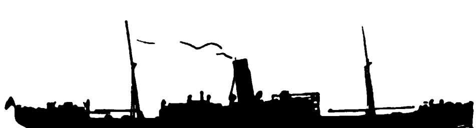


AGAPENOR. ELPENOR. EUMAEUS. GLAUCUS. HELENUS. LYCAON. MACHAON. MENTOR. PHEMUS. PYRRHUS. TEIRESIAS. TROILUS. Blue Funnel Line.
Length, 455 ft. 2 ins.; Gross Tonnage, 7,587;
Funnel: Blue, Black Top.



KONINGEN DER NEDERLANDEN. Stoomvaart Maatschappy.
Length, 455 ft.; Gross Tonnage, 8,300;
Funnel: Buff, Black Top.

CLAN MACTAGGART. Clan Line. Length, 452 ft. 7 ins.; Gross Tonnage, 7,602;
CLAN MACTAVISH. „ „ Length, 469 ft.; Gross Tonnage, 7,619;
Funnel: Black, two Red Bands.



GARTH CASTLE. GRANTULLY CASTLE. Union Castle.

Length, 452 ft. 6 ins; Gross Tonnage, 7,715;
Funnel: Red, Black Top.

MANUEL ARNUS. **Compañia Trasatlantica.** Length, 451 ft. 6 ins.; Gross Tonnage, 7,578; Funnel: Black.

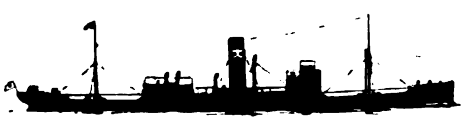
M.S. ABA. **M.S. ADDA.** **Elder Dempster.** Length, 450 ft. 3 ins.; Gross Tonnage, 7,938; Funnel: Buff.

M.S. DORSETSHIRE. **M.S. SOMERSETSHIRE.** **Bibby Line**
Length, 450 ft. 8 ins.; Gross Tonnage, 7,500;
Funnel: Salmon Pink, Black Top.

SICILIA. **SOUDAN.** **Peninsular and Oriental.**
Length, 450 ft. 2 ins.; Gross Tonnage, 6,684;
Funnel: Black.

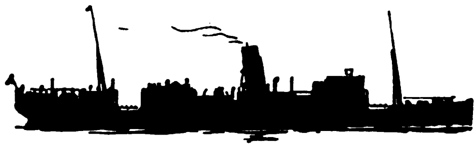
M.S. DOMALA. **British India S.N. Co.** Length, 450 ft.; Gross Tonnage, 8,441; Funnel: Black, Two White Bands, Black Top.

CIRCASSIA. **Anchor Henderson.** Length, 450 ft.; Gross Tonnage, 7,180; Funnel: Black.

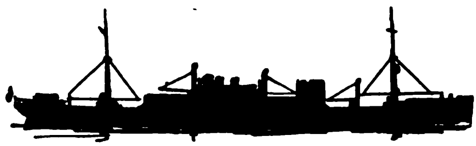


LONDON MARU. **PARIS MARU.** **Osaka Shosen Kaisha.** Length, 450 ft.; Gross Tonnage, 7,600; Funnel: Black, Two White Bands joined at Sides.

R

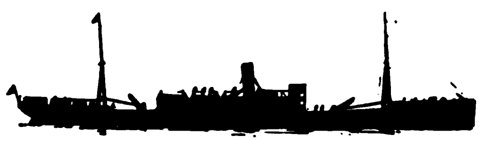


MAKURA. Union Steam Ship Co. of N.Z. Length, 450 ft. ; Gross Tonnage, 8,075 ;
Funnel : Red, Black Top.



M.S. ESQUILINO. M.S. VIMINALE. Lloyd Triestino. Length, 450 ft. ;
Gross Tonnage, 10,000.

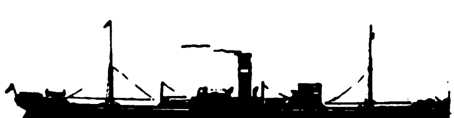
BAKARA. BARAMBAH. BOONAH. Australian Commonwealth Line
Length, 450 ft. ; Gross Tonnage, 5,970 ;
Funnel : Black.



NANKIN. NOVARA. Peninsular and Oriental. Length, 449 ft. 7 ins. ; Gross Tonnage, 7,058
Funnel : Black.

M.S. CAMRANH. Chargeurs Réunis. Length, 449 ft. 5 ins. ; Gross Tonnage, 8,500 ;
Funnel : Yellow, Red Stars on White Band.

MASIRAH. Anchor-Brocklebank Line. Length, 448 ft. ; Gross Tonnage, 6,836 ;
Funnel : Black, White Band, Blue and White Stripe Band, Black Top.



ANCHORIA. Anchor-Brocklebank Line. Length, 446 ft. 4 ins. ; Gross Tonnage, 6,112 ;
Funnel : Black, White Band, Blue and White Stripe Band, Black Top.

MAHRATTA. MAKALLA. Anchor-Brocklebank Line. Length, 445 ft.; Gross Tonnage, 6,690; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

M.S. ASIATIC PRINCE. M.S. CHINESE PRINCE. M.S. JAPANESE PRINCE. M.S. JAVANESE PRINCE. M.S. MAYLAYAN PRINCE. Length, 440 ft.; Gross Tonnage, 10,000.

ANTONIO LOPEZ. Compañia Trasatlantica. Length, 440 ft.; Gross Tonnage, 5,975; Funnel: Black.

HILDEBRAND. Booth Line. Length, 440 ft. 8 ins.; Gross Tonnage, 6,995; Funnel: Black.

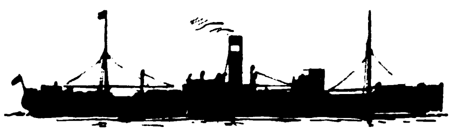
ELYSIA. Anchor Henderson. Length, 440 ft.; Gross Tonnage, 6,368; Funnel: Black.

BRITISH MERCHANT. British Tanker Co. Length, 440 ft.; Gross Tonnage, 7,400; Funnel: Black, Two Red Bands, White Disc, B.T.C. in centre.

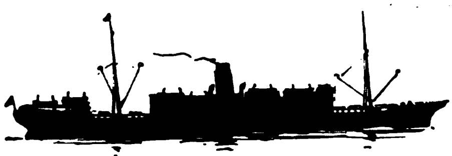
ZEELANDIA. Koninklijke Hollandsch Lloyd. Length, 440 ft.; Gross Tonnage, 7,995; Funnel: Yellow, Black Band.

CLAN URQUHART. Clan Line. Length, 440 ft.; Gross Tonnage, 5,856; Funnel: Black, Two Red Bands.

M.S. GLENAMOY. Glen Line. Length, 435 ft.; Gross Tonnage, 7,260; Funnel: Red, Black Top.



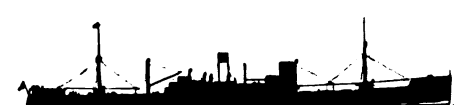
CITY OF NORWICH. Ellerman (Hall Line). Length, 434 ft. 4 ins.; Gross Tonnage, 6,726; Funnel: Buff, White Band, Black Top.



REINA MARIA CRISTINA. Compañia Trasatlantica. Length, 434 ft.; Gross Tonnage, 4,817; Funnel: Black.

NAGINA. British India Steam Navigation Co. Length, 433 ft.; Gross Tonnage, 6,650; Funnel: Black, Two White Bands.

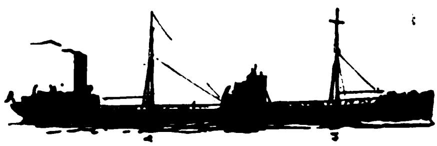
TAKADA. TANDA. British India S.N.Co. Length, 430 ft. 1 in.; Gross Tonnage, 6,949; Funnel: Black, Two White Bands, Black Top.



M.S. LEIGHTON. M.S. LINNELL. Lamport and Holt. Length, 430 ft.; Gross Tonnage, 7,412; Funnel: Light Blue, White Band, Black Top.

M.S. UPWEY GRANGE. **Furness-Houlder.** Length, 430 ft. ; Gross Tonnage, 9,100 ;
Funnel : Black, Red Band with White Maltese Cross, Black Top.

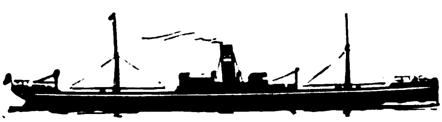
HARDWICKE GRANGE. **Furness-Houlder.** Length, 430 ft. ; Gross Tonnage, 9,005 ;
Funnel : Black, Red Band with White Maltese Cross, Black Top.



BRITISH INVENTOR. **British Tanker Co.** Length, 430 ft. ; Gross Tonnage, 7,200 ;
Funnel : Black, Two Red Bands, White Disc, B.T.C. in Centre.

MARQUESA. **Furness-Houlder.** Length, 480 ft. ; Gross Tonnage, 8,979 ;
Funnel : Black, Red Band with White Maltese Cross, Black Top.

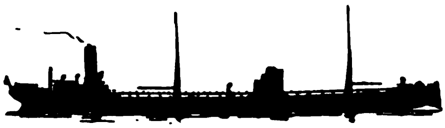
BAYANO. CAMITO. CORONADO. **Elders and Fyffes.**
Length, 425 ft. 5 ins. ; Gross Tonnage, 6,788 ;
Funnel : Buff, Black Top.



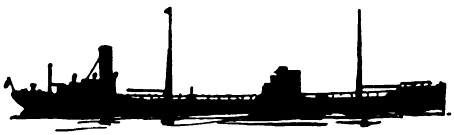
STOCKWELL. **Anchor-Brocklebank Line.** Length, 425 ft. ; Gross Tonnage, 5,643 ;
Funnel : Black, White Band, Blue and White Stripe Band, Black Top.

CAIRNROSS. **Cairns, Noble & Co.** Length, 425 ft. ; Gross Tonnage, 5,494 ;
Funnel : Black, Red Band, White Triangle.

KARAGOLA. British India S.N. Co. Length, 425 ft.; Gross Tonnage, 7,053; Funnel: Black, Two White Bands, Black Top.



TUSCARORA. Anglo American Oil Co. Length, 425 ft.; Gross Tonnage, 7,106; Funnel: Red, Black Top.



M.S. NARRAGANSETT. M.S. SEMINOLE. Anglo American Oil Co. Length, 425 ft.; Gross Tonnage, 6,889; Funnel: Red, Black Top.

BUENOS AIRES. Compañia Trasatlantica. Length, 422 ft.; Gross Tonnage, 5,311; Funnel: Black.

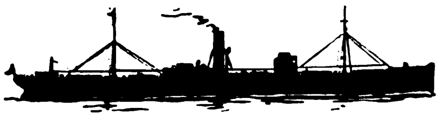
LEON XIII. Compañia Trasatlantica. Length, 421 ft.; Gross Tonnage, 5,086; Funnel: Black.

P. DE SATRUSTEGUI. Compañia Trasatlantica. Length, 421 ft. 10 ins.; Gross Tonnage, 4,670; Funnel: Black.

KAROOLA. KATOOMBA. McIlwraith, McEacharn. Length, 420 ft. 5 ins.; Gross Tonnage, 7,391; Funnel: Red, Black Top.

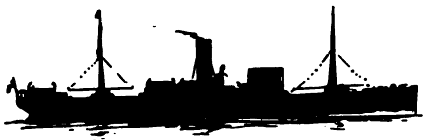
MARAMA. Union Steamship Co. of N.Z. Length, 420 ft. 3 ins.; Gross Tonnage, 6,497; Funnel: Red, Black Top.

SAN DUNSTANO. SAN EDUARDO. SAN RICARDO. SAN SILVESTRE. SAN TIRSO. SAN VALERIO. SAN ZEFERINO. Eagle Oil Transport Co., Ltd. Length, 420 ft. 2 ins.; Gross Tonnage, 6,220; Funnel: Black, Yellow Band, Black Eagle, Black O on White Band, Yellow Band.

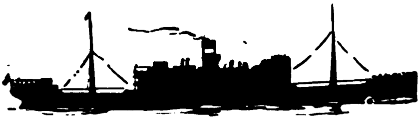


ALNMOOR. CASTLEMOOR. Runciman. Length, 420 ft.; Gross Tonnage, 6,573; Funnel: Black, White Band, Blue R.

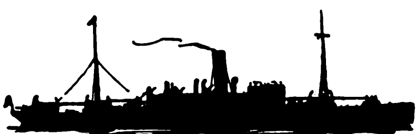
CAIRNVALONA. Cairns, Noble & Co. Length, 415 ft. 2 ins.; Gross Tonnage, 4,929; Funnel: Black, Red Band, White Triangle.



D'ENTRECASTEAUX. FORBIN. Chargeurs Réunis. Length, 415 ft.; Gross Tonnage, 7,563;
DUPLEIX. " " " " 7,418;
ANGO. " " " " 7,393;
BOUGAINVILLE. " " 413 ft.; " 7,293;
Funnel: Yellow, Red Stars on White Band.



MUNARGO. Munson Steamship Co. Length, 415 ft.; Gross Tonnage, 6,484; Funnel: Blue, White Band, Black Top.



BELVIDERE. Cosulich Line. Length, 412 ft.; Gross Tonnage, 7,305; Funnel: Red, White Band, Black Top.

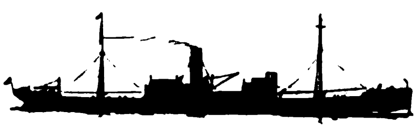
FORT ST. GEORGE. FORT VICTORIA. Furness Withy. Length, 411 ft. 3 ins.; Gross Tonnage, 7,785; Funnel: Black, Red, Thin Black and Red Bands, Black Top.

ERINPURA. British India S.N. Co. Length, 411 ft.; Gross Tonnage, 5,128; Funnel: Black, Two White Bands, Black Top.

ZEALANDIA.—Huddart, Parker. Length, 410 ft.; Gross Tonnage, 7,000; Funnel: Yellow.

CLAN MACNAB. CLAN MACNAIR. CLAN MACNAUGHTON. CLAN MACNEIL. CLAN MONROE. CLAN MORRISON. CLAN MURDOCH. CLAN MURRAY. Clan Line. Length, 410 ft. 6 ins.; Gross Tonnage, 6,114; Funnel: Black, Two Red Bands.

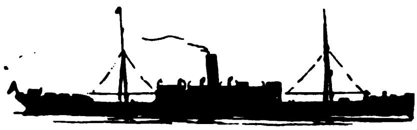
MEDIA. Anchor-Brocklebank. Length, 410 ft.; Gross Tonnage, 5,437; Funnel: Black, White Band, Blue and White Stripe Band, Black Top.



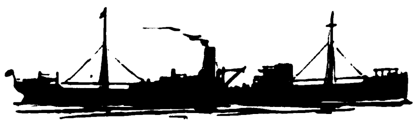
OCEAN PRINCE. Furness Withy. Length, 410 ft.; Gross Tonnage, 5,212; Funnel: Black, Red, Thin Black and Red Bands, Black Top.

ELLENGA. British India S.N. Co. Length, 410 ft.; Gross Tonnage, 5,196; Funnel: Black, Two White Bands, Black Top.

DRAMATIST. Harrison Line. Length, 410 ft.; Gross Tonnage, 5,443; Funnel: Black Red Band between Two White.



C. LOPEZ Y LOPEZ. Compañia Trasatlantica. Length, 408 ft.; Gross Tonnage, 4,170; Funnel: Black.



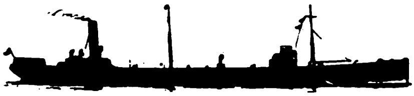
EGBA. Elder Dempster. Length, 406 ft.; Gross Tonnage, 4,989; Funnel: Buff.

EBOE. Elder Dempster. Length, 405 ft. 1 in.; Gross Tonnage, 4,866; Funnel: Buff.

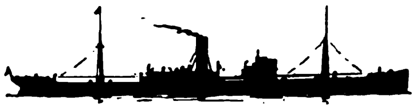
HIGHLAND LADDIE. Nelson. Length, 405 ft.; Gross Tonnage, 7,381;
HIGHLAND LOCH. „ Length, 413 ft.; Gross Tonnage, 7,493;
HIGHLAND PIPER. „ Length, 413 ft.; Gross Tonnage, 7,490;
Funnel: Red, Two White Bands, Black Between, Black Top.

NEWFOUNDLAND. Warren Line (Furness Withy). Length, 405 ft. Gross Tonnage, 6,820; Funnel: Black, Red, Thin Red and Black Bands.

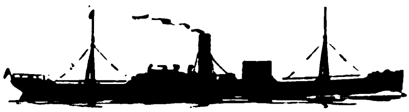
M.S. LOUISIANA. Det Forenede Dampskibs Selskab. Length, 405 ft.; Gross Tonnage, 6,513; Funnel: Flamingo Red, Black Top.



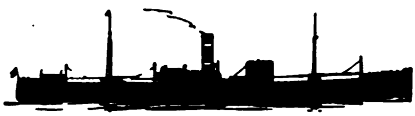
DAGHESTAN. Oil Tanker. Hindustan Steam Shipping Co. Length, 405 ft.
Gross Tonnage, 5,742;
Funnel: Black, Two White Bands, Vermilion Between, C in White.



M.S. GLENLUCE. M.S. GLENTARA. Glen Line. Length, 405 ft.; Gross Tonnage, 6,755;
Funnel: Red, Black Top.

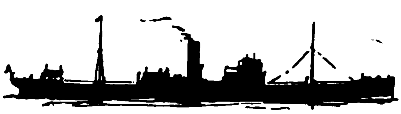


KALIMBA. ROMERA. Maclay and McIntyre. Length, 402 ft. 3 ins.; Gross Tonnage, 4892;
Funnel: Yellow, Black Top.

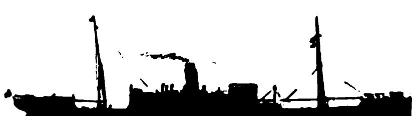


BREDA. BRIELLE. Koninklijke Nederlandsche Stoomboot Mij. Length, 402 ft.;
Gross Tonnage, 6,915;
Funnel: Black, Two White Bands.

HOLYWELL. Anchor-Brocklebank. Length, 401 ft. 8 ins.; Gross Tonnage, 4,867
Funnel: Black, White Band, Blue and White Stripe Band, Black Top.

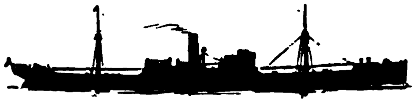


HALIZONES. Houston Line. Length, 400 ft. 8 ins.; Gross Tonnage, 5,273;
Funnel: Red, Two Black Bands, Black Top.

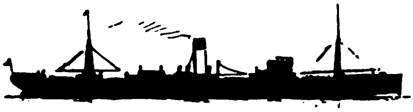


CHALEUR. CHAUDIERE. CHIGNECTO. Royal Mail Steam Packet Co.
Length, 400 ft. 5 ins.; Gross Tonnage, 4,890;
Funnel: Buff.

ABINSI. Elder Dempster. Length, 400 ft. 5 ins.; Gross Tonnage, 6,365;
Funnel: Buff.



ARIANO. Gulf Line. Length, 400 ft. 4 ins. ; Gross Tonnage, 5,155 ;
Funnel : Black, Wide Red Band, Narrow Red Band Below.

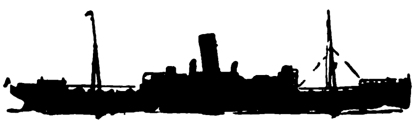


NORWEGIAN. Leyland Line. Length, 400 ft. 2 ins. ; Gross Tonnage, 6,357 ;
Funnel : Buff, Black Top.

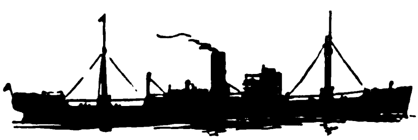
MANISTEE. PATIA. ZENT. Elders and Fyffes. Length, 400 ft. 2 ins. ; Gross Tonnage, 5,360 ;
Funnel : Buff, Black Top.

EDAVANA, ELEPHANTA. British India S.N. Co. Length, 400 ft. ; Gross Tonnage, 5,284 ;
Funnel : Black, Two White Bands, Black Top.

CANADIAN VICTOR. Canadian Government Merchant Marine. Length, 400 ft. ;
Gross Tonnage, 5,493 ;
Funnel : Yellow, Black Top.



ANSELM. Booth Line. Length, 400 ft. ; Gross Tonnage, 5,450 ;
Funnel : Black.

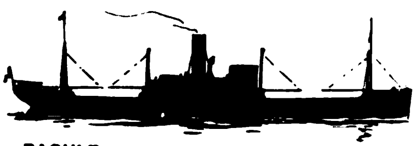


M.S. DOLIUS. Blue Funnel Line. Length, 400 ft. ; Gross Tonnage, 5,700 ;
Funnel : Blue, Black Top.

ORANGEMOOR. **Runciman.** Length, 399 ft. 6 ins.; Gross Tonnage, 6,573;
Funnel: Black, White Band, Blue R.

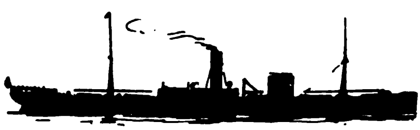
CAIRNDHU. **Cairns, Noble & Co.** Length, 399 ft. 3 ins.; Gross Tonnage, 5,250;
CAIRNGOWAN. ,, ,, Length, 400 ft.; Gross Tonnage, 5,295;
Funnel: Black, Red Band, White Triangle.

M.S. LULE. **Grängesberg Oxelösund Co.** Length, 399 ft.; Gross Tonnage, 5,630;
Funnel: Buff, Blue Band, Gold Emblem.



BAOULE.
CASAMANCE.
DAHOMEY. } **Chargeurs Réunis.** Length, 391 ft.; Gross Tonnage, 5,900;
ADRAR. ,, ,, ,, ,, ,, ,, 5,355;
Funnel: Yellow, Red Stars on White Band.

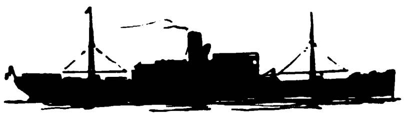
ANGORA. **British India S.N. Co.** Length, 390 ft. 8 ins.; Gross Tonnage, 4,298;
Funnel: Black, Two White Bands, Black Top.



CAIRNMONA. **Cairns, Noble & Co.** Length, 390 ft. 2 ins.; Gross Tonnage, 4,666;
Funnel: Black, Red Band, White Triangle.

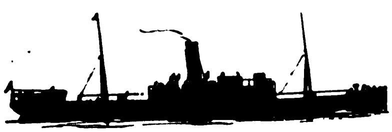
ARONDA. **British India S.N. Co.** Length, 390 ft. 2 ins.; Gross Tonnage, 4,062;
Funnel: Black, Two White Bands, Black Top.

VARELA. VARSOVA. VITA. British India S.N. Co. Length, 390 ft. 1 in.; Gross Tonnage, 4,645; Funnel: Black, Two White Bands, Black Top.

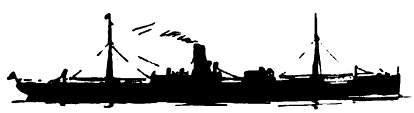


AMIRAL NEILLY. AMIRAL PONTY. AMIRAL LATOUCHE TREVILLE. Chargeurs Réunis. Length, 389 ft. 5 ins.; Gross Tonnage, 5,582; Funnel: Yellow, Red Stars on White Band.

OLJAREN. Transatlantic S.S. Co. Length, 389 ft.; Gross Tonnage, 5,450; Funnel: Yellow, Black Top.

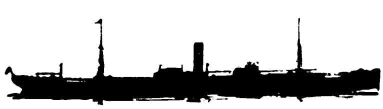


LEGAZPI. Compañia Trasatlantica. Length, 389 ft.; Gross Tonnage, 4,339; Funnel: Black.



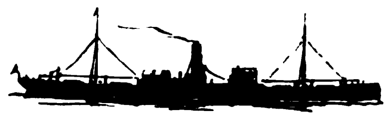
COOEE. Australian Commonwealth Line. Length, 387 ft. 8 ins.; Gross Tonnage, 4,255; Funnel: Black.

MONTSERRAT. Compañia Trasatlantica. Length, 386 ft. 1 in.; Gross Tonnage, 3,994; Funnel: Black.

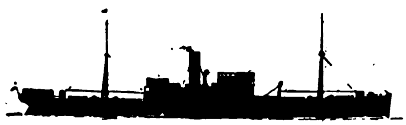


SCATWELL. Cairns, Noble & Co. Length, 385 ft.; Gross Tonnage, 4,425; Funnel: Black, Red Band, White Triangle.

HALESIUS. **Houston Line.** Length, 385 ft. ; Gross Tonnage, 4,652 ;
Funnel : Red, Two Black Bands, Black Top.



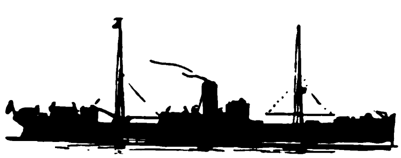
HESPERIDES. **Houston Line.** Length, 382 ft. 5 ins. ; Gross Tonnage, 3,914 ;
Funnel : Red, Two Black Bands, Black Top.



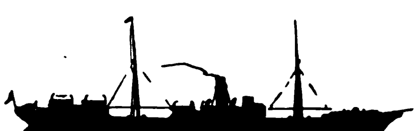
DENIS. STEPHEN. **Booth Line.** Length, 376 ft. 4 ins. ; Gross Tonnage, 4,435 ;
Funnel : Black.

AIDAN. **Booth Line.** Length, 375 ft. 9 ins. ; Gross Tonnage, 4,545 ;
Funnel : Black.

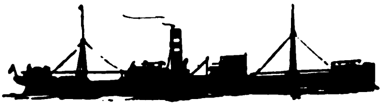
ALBAN. **Booth Line.** Length, 375 ft. 2 ins. ; Gross Tonnage, 5,223 ;
Funnel : Black.



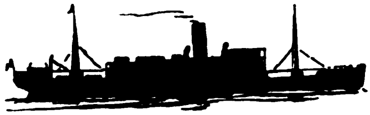
ISLA DE PANAY. **Compañia Trasatlantica.** Length, 373 ft. ; Gross Tonnage, 3,484 ;
Funnel : Black.



ALICANTE. **Compañia Trasatlantica.** Length, 372 ft. 2 ins. ; Gross Tonnage, 3,879 ;
Funnel : Black.



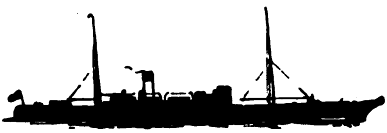
SPEAKER. Harrison Line. Length, 370 ft.; Gross Tonnage, 4,264; Funnel: Black, Red Band between Two White.



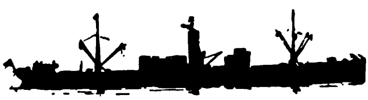
EUROPE. Chargeurs Réunis. Length, 369 ft.; Gross Tonnage, 5,453; Funnel: Yellow, Red Stars on White Band.

SANTA AURORA. Eagle Oil Transport Co., Ltd. Length, 367 ft. 5 ins.; Gross Tonnage, 4,278; Funnel: Black, Yellow Band, Black Eagle, Black O on White Band, Yellow Band.

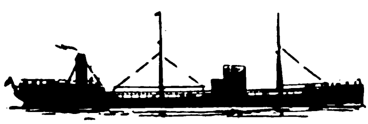
HESIONE. Houston Line. Length, 361 ft. 7 ins.; Gross Tonnage, 4,125; Funnel: Red, Black Top.



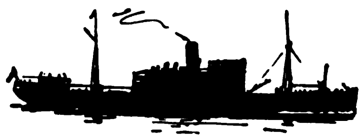
JOHN W. MACAY. Commercial Cable Co., N.Y. Length, 360 ft.; Gross Tonnage, 4,049; Funnel: Buff, Black Top.



CUTHBERT. JUSTIN. Booth Line. Length, 355 ft.; Gross Tonnage, 3,843; Funnel: Black.

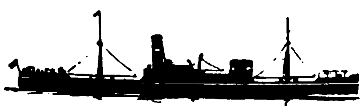


BRITISH COMMERCE. BRITISH ENTERPRISE. BRITISH TRADER. British Tanker Co. Length, 351 ft. 4 ins.; Gross Tonnage, 4,205; Funnel: Black, Two Red Bands, White Disc, B.T.C. in centre.



CHANGTE. Australian-Oriental Line. Length, 350 ft.; Gross Tonnage 4324; Funnel: Black.

REGELE CAROL I. Roumanian State. Length, 350 ft.; Gross Tonnage, 2,370; Funnel: White, Black Top.



M.S. MALIA. Anchor Brocklebank. Length, 350 ft. 5 ins.; Gross Tonnage, 3,872; Funnel: Black, White Band, Blue and White Striped Band, Black Top.

POLYCARP. Booth Line. Length, 340 ft. 7 ins.: Gross Tonnage, 3,577; Funnel: Black.

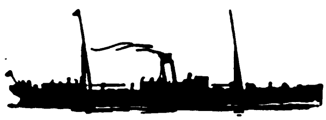
BARODA. British India S.N. Co. Length, 330 ft. 4 ins.; Gross Tonnage, 3,172; Funnel: Black, Two White Bands, Black Top.

ISLE OF THANET. MAID OF KENT. Southern Railway. Length, 329 ft.; Gross Tonnage, 2,664; Funnel: White Black Tops.

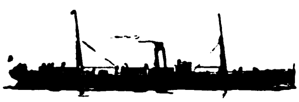
LA PERLA M.S. LA MAREA. M.S. LA PLAYA. United Fruit Co. Length, 325 ft.; Gross Tonnage, 3,830; Funnel: Buff, White Diamond on Red Bank, Black Top.

MICHAEL. **Booth Line.** Length, 300 ft. 5 ins.; Gross Tonnage, 3,172; Funnel: Black.

SLIEVEBAWN. SLIEVEMORE. London, Midland and Scottish Railway.
Length, 300 ft. 2 ins.; Gross Tonnage, 1,061;
Funnel: Yellow, Black Top.

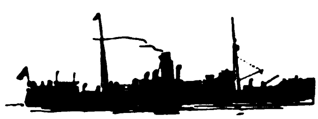


SLIEVE DONARD. London, Midland and Scottish Railway.
Length, 300 ft.; Gross Tonnage, 1,116;
Funnel: Yellow, Black Top.



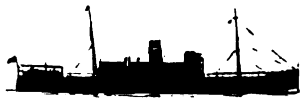
SNOWDEN. London, Midland and Scottish Railway. Length, 299 ft. 9 ins.; Gross Tonnage, 1021;
SOUTH STACK. ,, ,, Length, 299 ft.; Gross Tonnage, 977;
Funnel: Yellow, Black Top.

SLIEVEGALLION. London, Midland and Scottish Railway.
Length, 299 ft. 5 ins.; Gross Tonnage, 1,071;
Funnel: Yellow, Black Top.



SAN CARLOS. Compañia Trasatlantica. Length, 291 ft.; Gross Tonnage, 2,491;
Funnel: Black.

PRINCESS ADELAIDE. Canadian Pacific. Length, 290 ft. 5 ins. Gross Tonnage, 3,031;
Funnel: Yellow.



M.S. DUMRA. British India S.N. Co. Length, 280 ft.; Gross Tonnage, 2,000; Funnel: Black, Two White Bands, Black Top.

GALTEE MORE. ROSSTREVOR. London, Midland and Scottish Railway. Length, 276 ft. 1 in.; Gross Tonnage, 1,112; Funnel: Yellow, Black Top.

CADILLAC. SARANAC. Anglo American Oil Co. Length, 530 ft. 2 ins.; Gross Tonnage, 12,074; Funnel: Red Black Top.

DIMENSIONS AND PARTICULARS

OF

BRITISH AND FOREIGN WARSHIPS.

LIST OF BRITISH AND FOREIGN SHIPS.

The following abbreviations are used throughout the Alphabetical List:—

a.c.	Armoured cruiser.
a.g.b.	Armoured gunboat.
b.	Battleship.
b.c.	Battle-cruiser.
l.cr.	Light cruiser.
Flot. ldr.	Flotilla leader.
c.d.s.	Coast-defence ship.
P. L. Cr.	Protected light cruiser.
M.Cr.	Minelaying cruiser.
cr.	Cruiser.
A.A.	Anti-aircraft guns. (H A. = High angle)
A.C.	Aircraft carrier.
A.T.	Aircraft tender.
g.b.	Gunboat.
g.v.	Gun-vessel.
H.A.	High angle = A.A. Anti-aircraft.
H.N.S.	Harvey nickel steel.
H.S.	Harveyised or similar hard-faced steel.
K.S.	Krupp steel.
p.v.	Patrol vessel.
t.	Turret-ship (in class column).
t.	Speed and H.P. at trials (in speed and H.P. columns).
to.cr.	Torpedo-cruiser.
to.g.b.	Torpedo-gunboat.

l.	Light guns under 15 cwt., including boats' guns.
M.	Machine guns.
sub.	Submerged torpedo tube.

The following abbreviations are used to distinguish the various types of boilers:—

W.T.	Water-tube boilers, where the type is not known.
B.	Belleville.
Bl.	Blechynden.
B. & W.	Babcock and Wilcox.
D'A.	D'Allest.
My.	Myabara.
N. or Nic.	Niclausse.
Nor.	Normand.
N.S.	Normand-Sigaudy.
T.	Thornycroft.
T.S.	Thornycroft-Schulz.
Y[1].	Yarrow small tube.
Y[2].	Yarrow large tube.

The following abbreviations distinguish types of turbines:—

P.T.	Parsons.
(G.)	Geared turbines.
C.T.	Curtis.
B.C.T.	Brown-Curtis.

A reference is now given in the tables to the pages on which diagrams of the ships appear.

GREAT BRITAIN.—Armoured Ships.

Class.	NAME. DATE FOR SCRAPPING.	Displacement.	Length.	Beam (Extreme.)	Draught.	Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons	ft.	ft. ins.	ft. ins.						£	in.	in.	in.	in.	in.	in.			knots.	tons	
b.	**Ajax** . . 1927 *See p.* 334.	23,000	555	89 0	27 6	28,000 B. & W.	Greenock	Scott . P.T.	1912	1913	1,937,631*	12–6	2½–1	9	1¾–1	10	3–1	10 *13·5-in.*, 12 *4-in.*, 2 *3-in.* A.A.; 4 *3-pr.*, 5 M.; 10 L.	2	21 *t*	3150 / 850	1132
b.	**Barham** . 1935 *See p.* 332.	27,500	600	90 6	28 9	75,000 B. & W.	Clydeb'nk	J. Brown B.C.T.	1914	1915	..	13–6	3–1	6	4–2	10	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *3-in.* A.A.; 5 M.; 10 L	4	25	Oil 3400	1279
b.	**Benbow** . 1934 *See p.* 333.	25,000	580	90 0	28 0	29,000 B. & W.	Dalmuir .	Beardmore P.T.	1913	1914	2,027,115*	12–8	1–2½	9–8	1–1½	10	6	10 *13·5-in.*, 12 *6-in.*, 4 *3-pr.* 2 *3-in.* A.A.; 5 M.; 10 L.	4	21	3250 / 1050 Oil	1213
b.	**Centurion** † . 1927 *See p.* 334.	23,000	555	89 0	27 6	28,200 Y[2]	Devonp'rt	Hawthorn P.T.	1911	1913	1,939,648*	12–6	2½–1	9	1¾–1	10	3–1	10 *13·5-in.*, 12 *4-in.*, 4 *3-pr.*; 5 M.; 10 L.	2	21 *t*	3150 / 850	1135
b.	**Emperor of India** . 1934 *See p.* 333.	25,000	580	90 0	28 0	29,000 Y.	Barrow .	Vickers . P. T.	1913	1914	2,020,017*	12–8	1–2½	9–8	1–1½	10	6	10 *13·5-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *3-in.* A.A.; 5 M.; 10 L.	4	21	3250 / 1050 Oil.	1195
b.c.	**Hood** . 1941 *See p.* 336.	41,200	810	105 2½	28 6	144,000	Clydeb'k	J. Brown . B.C.T. (G.)	1918	1920	5,843,039*	12–6	3–1	7–5	5–4	15–11	(*a*)	8 *15-in.*, 12 *5·5-in.*, 4 *4-in.* A.A., 4 *3-pr.*	4 (deck) 2 (sub.)	31	4000 Oil	1482
b.	**Iron Duke** . 1934 *See p.* 333.	25,000	580	90 0	28 0	29,000 B. & W.	Portsm'th	Cammell Laird P.T.	1912	1914	2,080,918	12–8	1–2½	9–8	1–1½	10	6	10 *13·5-in.*, 12 *6-in.*, 4 *3-pr.* 2 *3-in.* A.A.; 5 M.; 10 L.	4	21 *t*	3250 / 1050 Oil	1235
b.	**King George V.** 1927 *See p.* 334.	23,000	555	89 0	27 6	28,005 B. & W.	Portsm'th	Parsons . P.T.	1911	1912	1,965,413*	12–6	2½–1	9	1¾–1	10	3–1	10 *13·5-in.*, 12 *4-in.*, 2 *3-in.* A.A.; 4 *3-pr.* 5 M.; 10 L.	2	21 *t*	2870 / 850	1133

b.	**Malaya¶** 1936 *See p.* 332.	27,500	600	90	9	28	9	75,000 B. & W.	Walker	Wallsend P. T.	1915	1916	¶	13-6	3-1	6	4-2	10	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 4 *4-in.* A.A.; 5 M.; 10 L.	4	25	Oil 3400	1234
b.	**Marlborough** 1934 *See p.* 333.	25,000	580	90	0	28	0	29,000 Y²	Devonport	Hawthorn P.T.	1912	1914	2,043,437	12–8	1–2⅓	9–8	1–1½	10	6	10 *13·5-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *3-in.* A.A.; 5 M; 10 L	4	21 *t*	3250 1050 Oil	1193
b.	**Nelson** 1942	35,000	702	106	0	30	0	..	N'wc'stle-on-Tyne	Wallsend	1925	..	7,000,000*	..	..	..	..	..	..	9 *16-in.*, 12 *6-in.*	..	..	..	..
b.	**Queen Elizabeth** 1935 *See p.* 332.	27,500	600	90	6	28	9	75,000 B. & W.	Portsm'th	Wallsend P.T.	1913	1915	..	13-6	3-1	6	4-2	10	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *3-in.* A.A.; 5 M.; 10 L.	4	25	Oil 3400	1299
b.	**Ramillies** 1941	25,750	580	101	6	25	6	40,000 Y.	Dalmuir	Beard-more, P.T.	1916	1917	..	13-6	4-1	6	6-4	11	6	8 *15-in.*, 14 *6-in.*, 4 *3-pr.*, 2 *4-in.* A.A.; 5 M.; 10 L.	4	23	3250 Oil	1201
b.	**Resolution** 1937 *See p.* 331.			‡101	4	26	3		Jarrow	Palmer P.T.	1915	1916												
b.	**Revenge** 1937 *See p.* 331.			‡101	5	26	3		Barrow	Vickers P.T.	1915	1916	..											1219
b.	**Royal Oak** 1938 *See p.* 331.	25,750	580	‡102	1	25	6	40,000 Y.	Devonp'rt	Hawthorn P.T.	1914	1916	2,468,269	13-6	4-1	6	6-4	11	6	8 *15-in.*, 14 *6-in.*, 4 *3-pr.*, 2 *4-in.* A.A.; 5 M; 10 L.	4	23	3250 Oil.	1201
b.	**Royal Sovereign** 1936 *See p.* 331.			‡102	0	26	3		Portsm'th	Parsons P.T.	1915	1916	2,570,929											1201
b.c.	**Renown** 1940	26,500	750	90	0	25	6	112,000 B. & W.	Govan	Fairfield B.C.T.	1916	1916	3,111,284	6-3 K.C.	2	6-3	4-3	9-7 K.C.	6 K.C.	6 *15-in.*, 15 *4-in.*, 4 *3-pr.*, 4 *4-in.* A.A.; 5 M.; 10 L.	2 (sub.) 8 a.w.	31·5	4250 Oil.	1240
b.c.	**Repulse** 1939 *See p.* 337.			102	8	23	3		Clydeb'nk	J. Brown B.C.T.	1916	1916	2,760,062											
b.	**Rodney** 1942	35,000	702	106	0	30	0	..	Birkenh'd	Cammell Laird	1925	..	7,000,000*	..	..	..	..	..	..	9 *16-in.*, 12 *6-in.*	..	..	..	..
b.	**Thunderer** 1927 *See p.* 335.	22,500	545	88	6	27	6	27,604 B. & W.	Blackwall	Thames Ironworks P. T.	1911	1912	1,889,920*	12	..	9	..	10	Nil	10 *13·5-in.*, 8 *4-in.*, 1 *3-in.* A.A., 4 *3-pr.*; 5 M.; 10 L.	2	21	3300 800	1110

* Total estimated cost of ship including guns.
† Being converted to Fleet target ship.
(*a*) Guns are in shields of 1-in. H.T. plating.
‡ Over rubbers.
¶ Built at the charge of the Federated Malay States.

GREAT BRITAIN.—Armoured Ships—*continued.*

Class.	NAME. DATE FOR SCRAPPING.	Displacement.	Length.	Beam. (Extreme.)	Draught.	Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. Oil.	Complement.
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.c.	**Tiger** . . 1935 *See p.* 338.	28,500	660	90 6	28 6	108,000 B. & W.	Clydeb'nk	J. Brown . B. C. T.	1913	1914	2,500,000*	9–3	3–1	6	4–2	9	6	8 *13·5-in.*, 12 *6-in.*, 4 *3-pr.*, 4 *4-in.* A.A.; 5 M.; 10 L.	4	30	†2800 / 3480	1110
b.	**Valiant** . 1939 *See p.* 332.	27,500	600	90 6	28 9	75,000 B. & W.	Govan .	Fairfield . B. C. T.	1914	1916	2,537,037*	13–6	3–1	6	4–2	10	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *3-in.* A.A.; 5 M.; 10 L.	4	25	Oil / 3400	1284
b.	**Warspite** . 1935 *See p.* 332.	27,500	600	90 6	28 9	75,000 B. & W.	Devonp'rt	Hawthorn P.T.	1913	1915	2,524,148*	13–6	3–1	6	4–2	10	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 4 *4-in.* A.A.; 5 M.; 10 L.	4	25	Oil / 3400	1234

* Total estimated cost of ship, including guns.

† Total fuel carried not to exceed 4900 tons.

The dates placed under the names of ships indicate the years in which they are to be scrapped according to the Washington Treaty.

The following ship is in the non-effective category: Agamemnon, battleship, Fleet target service. Agamemnon, Ajax, King George V. and Thunderer will be shortly placed on the sale list.

River Gunboats.

Two classes of river gunboats were added to the Navy during the war. The larger class has a displacement of 640 tons, length 230 ft., beam 36 ft., draught 4 ft., H.P. 2,000, speed 14 knots, armament, two 6-in., two 12-prs., six M.; fuel capacity, coal 35, oil 54 tons. Names:—Aphis, Bee, Cicala, Cockchafer, Cricket, Glowworm, Gnat, Ladybird, Mantis, Moth, Scarab and Tarantula. The smaller class has been scrapped. Older vessels of this category still remaining in commission are the Moorhen, Robin, Teal, Widgeon, Woodcock, and Woodlark. Four river gunboats are being fabricated at Messrs. Yarrow & Co., Scotstoun, two of these were laid down in March 1926, and two in April 1926. They will be erected and completed at Hong Kong.

GREAT BRITAIN.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam. (Extreme.)	Draught.	Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. / Deck.	Armour. Gun Position	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.			knots.	tons.	
M.Cr. .	~~Adventure~~ .	6,740	500	59 0	14 5	40,000	Devonp'rt	Vickers .	1924	Bldg.	..	..	..	4 *4·7-in*, 4 *3-pr.*	..	27¾	..	..
A.C. .	Argus .	14,450	565	*68 8	21 0	20,000	Dalmuir .	Beardmore T.	1917	1918	..	..	..	2 *4-in.*, 4 *4-in.* A.A., 4 *3-pr.*, 4 M., 10 L.	..	20¼	2000	401
A.C. .	Ark Royal .	7080	366	50 10	17 6	3000	Blyth	Blyth S. B. Co.	1914	1914	..	..	..	4 *12-pr.*, 4 M, 10 L.	..	11	500 Oil.	139
Cr. .	~~Devonshire~~ .	10,000	—	—	—	—	Devonp'rt	Vickers P.T.	—	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~London~~ .	10,000	—	—	—	—	Ports-mouth	Fairfield P.T.	—	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Shropshire~~ .	10,000	—	—	—	—	Dalmuir .	Beardmore	—	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Sussex~~ .	10,000	—	—	—	—	Hawthorn Leslie .	Hawthorn Leslie .	—	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Berwick~~ .	10,000	—	—	—	—	Govan	Fairfield .	1926	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Cornwall~~ .	10,000	—	—	—	—	Devonp'rt	Beardmore	1926	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Kent~~ .	10,000	—	—	—	—	Chatham	Hawthorn Leslie	1926	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Suffolk~~ .	10,000	—	—	—	—	Ports-mouth	Parsons .	1926	Bldg.	..	..	..	..	..	..	..	..
Cr. .	~~Cumberland~~ .	10,000	—	—	—	—	Barrow	Vickers .	1926	Bldg.	..	..	..	..	..	..	..	..
Cr. .	Birmingham . *See p.* 345.	5440	430	49 10	15 10	26,500	Elswick .	Hawthorn. T.	1913	1914	353,437*	..	..	9 *6-in.*, 4 *3-pr.*, 1 *3-in.* A.A., 2 M., 8 L.	2	25·5	1120 / 260	549
A.C. .	Courageous (*a*) *See p.* 340.	18,600	735	81 0	22 3	90,000 Y.	Walker . (Armstr'g)	Parsons . P.T.(G.)	1916	1917	..	3	9–7	..	2 / 12	31	Oil / 3250	1146
A.C. .	Glorious (*a*) *See p.* 340.						Belfast .	Harland & Wolff T.(G.)										
A.C. .	Furious .	19,100	735	88 0	21 6	90,000	Walker (Armstrong)	Wallsend Engn'g Co. T.(G.)	1916	1917	1,920,000†	3	7	10 *5·5-in.*, 6 *4-in.* A.A., 4 *3-pr.*, 14 M.	2 / 16	31	Oil / 4025	1146

(*a*) Conversion to aircraft-carrier now proceeding at Devonport.

* Extreme breadth under water. Breadth over lifeboat stowages is 110 ft. 5 ins.

GREAT BRITAIN.—Cruising Ships, &c.—*continued.*

Class.	NAME.	Displacement.	Length.	Beam (Extreme.)	Draught.	Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. / Deck.	Armour. Gun Position	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.			knots.	tons.	
P. L. Cr.	Calliope						Chath'm	Parsons P.T. (G.)	1914	1915	414,350						Oil. 805	368
„ „	Carysfort						Pembroke	Hawthorn. B.C.T.	1914	1915	383,100						917	379
„ „	Champion						Newcastle (Hawth'rn)	Hawthorn. P.T. (G.)	1914	1915							895	368
„ „	Cleopatra	3750	420	41 6	13 6	40,000	Devonport	Cammell Laird P.T.	1914	1915	440,000	3	..	4 *6-in.*, 2 *3-in.* A.A.‡ 2 *2-pr.* Pom Poms; 1 M.; 8 L.	4 §	29	917	368
„ „	Comus						Newcastle (Swan Hunter)	Wallsend Engn'g Co. P.T.	1914	1915							917	368
„ „	Conquest *See p. 344.*						Chatham	Scotts' P.T.	1914	1915							917	381
„ „	Cairo						Birken-head	Cammell Laird T.(G.)	1918	1919								
„ „	Calcutta						Barrow	Vickers T. (G.)	1918	1919								
„ „	Cape Town	4190	425	43 6	14 1	40,000	Birken-head	Cammell Laird T.(G.)	1919	1922	..	3	..	5 *6-in.*, 2 *3-in* A.A., 4 *3-pr.*; 2 *2-pr.* Pom Poms.	8	29	Oil 950	432
„ „	Carlisle						Govan	Fairfield T. (G.)	1918	1918								
„ „	Colombo *See p. 343.*						Govan	Fairfield T. (G.)	1918	1919								
„ „	Caledon						Birken-head	Cammell Laird T.(G.)	1916		547,300							
„ „	Calypso	4120	425	42 9	14 1	40,000	Glasgow	Scotts' T. (G.)	1917	1917	300,000	3	..	5 *6-in.*, 2 *3-in.* A.A., 4 *3-pr.*; 2 *2-pr.* Pom Poms; 2 M.; 8 L.	8	29	Oil 935	440
„ „	Caradoc *See p. 343.*						Barrow	Vickers T. (G.)	1916									

P. L. Cr. .	**Cambrian** .	3750	420	41	6	13	6	40,000	Pembroke	Cammell Laird T.	1916	1916	300,000†	3	..	‡	*6-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 2 *2-pr.*, Pom Poms; 1 M.; 8 L.	2	29	Oil / 841	368
” ” .	**Canterbury**								Clydebank	J. Brown . T.	1915	1916									
” ” .	**Castor** .								Birkenhead	Cammell Laird T.	1915	1915	358,300								
” ” .	**Constance**. *See p.* 344.								Birkenhead	Cammell Laird T.	1915	1916	374,270								
” ” .	**Cardiff** .	4190	425	43	6	14	1	40,000	Govan .	Fairfield . T. (G.)	1917	1917	..	3	..	5	*6-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms.	8	29	Oil / 950	460
” ” .	**Ceres** .								Clydebank	J. Brown . T. (G.)	1917	1917									
” ” .	**Coventry** .								Newcastle (Swan Hunter)	Swan Hunter T. (G.)	1917	1918									
” ” .	**Curacoa** .								Pembroke	Harland & Wolff T. (G.)	1917	1918									
” ” .	**Curlew** . *See p.* 343.								Barrow .	Vickers . P.T. (G.)	1917	1917									
” ” .	**Centaur** .	3750	420	42	0	13	6	40,000	Elswick	Armstrong T.	1916	1916	300,000†	3	..	5	*6-in.*, 2 *3-in.*, A.A.. 2 *3-pr.*, 2 *2-pr.* Pom Poms; 2 M.; 8 L.	2	29	Oil / 840	437
” ” .	**Concord** . *See p.* 343.								Elswick	Armstrong T.											
Cr. . .	**Dartmouth** . *See p.* 345.	5250	430	48	6	15	6	23,467 Y.	Barrow .	Vickers . P.T.	1911	1911	312,900	2-¾	..	8	*6-in.*, 4 *3-pr.*, 4 M., 1 *3-in.* A.A.	2	25·9 t	1290 / 260	539
P. L. Cr. .	**Despatch** . *See p.* 342.	4765	445	46	6	14	3	40,000	Govan .	Fairfield . T. (G.)	1919	1922	..	3	Shields	6	*6-in.*, 2 *4-in.* A.A., 2 M.	12	29	Oil / 1050	460
” ” .	**Danae** .	4750	445	46	0	14	3	40,000	Elswick	Armstrong T. (G.)	1918	1918	..	3	Shield	6	*6-in.*, 3 *4-in.* A.A., 2 M.	12	29	Oil / 1050	460
” ” .	**Dauntless** .								Jarrow .	Palmer . T. (G.)	1918	1918									
” ” .	**Dragon** . *See p.* 342.								Green'ck	Scott . T. (G.)	1917	1918									

† Estimated cost as originally designed. ‡ The Champion of this class has 4-in. anti aircraft guns; Comus, Carysfort, and Calliope have 4 3-pr. § Champion and Calliope have 2 submerged tubes.

GREAT BRITAIN.—Cruising Ships, &c.—*continued.*

Class.	NAME.	Displacement.	Length.	Beam. (Extreme.)	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.			knots.	tons.	
P. L. Cr.	Delhi	4750	445	46 0	14 3	40,000	Elswick	Armstrong T. (G.)	1918	1919	..	3	Shields	6 6-*in.*, 3 4-*in.* A.A. (Durban 2 4-*in.* A.A.), 2 M.	12	29	Oil / 1050	460
,, ,,	Durban *See p.* 342.	4765					Green'ck	Scott T. (G.)	1919	1921								
A.C.	Eagle, *ex* Almirante Cochrane.	22,790	625	105 2	21 11	50,000	Walker	J. Brown T.	1918	1924	3,310,042	..	..	9 6-*in.*, 5 4-*in.* A.A., 4 3-*pr.*	..	24	3750 / Oil	834
P. L. Cr.	Effingham	9750	565	65 0	17 3	65,000 (Hawkins 60,000)	Portsmouth	Harland & Wolff. T.	1921	1925	2,138,999	† 3	Shields	7 7·5-*in.*, 3 4-*in.* A.A., 4 3-*pr.*, 2 2-*pr.* Pom Poms; 2 M.; 8 L.	5 (1 sub.)	30	2150 / Oil 800 1420	748
,, ,,	Frobisher						Devonport	Wallsend Eng. Co. T.	1920	1924	2,035,915				6 (2 sub.)			
,, ,,	Hawkins *See p.* 341.						Chatham	Parsons Co. T. (G.)	1917	1919					6 (2 sub.)			
P. L. Cr.	Enterprise	7550	535	54 6	16 6	80,000	Clydebank	John Brown T. (G.)	1919	1926	1,690,658*	3–1½ / 1	..	7 6-*in.*, 3 4-*in.* A.A., 4 3-*pr.*, 2 2-*pr.* Pom Poms; 1 M.	12	33	1600 / Oil	577
,, ,,	Emerald *See p.* 340.						Elswick	Armstrong T. (G.)	1920	1926	1,474,235*							
A.C.	Hermes	10,950	518	‡70 3	18 7	40,000	Elswick	Parsons Co. T. (G.)	1919	1924	..	..	..	7 5·5-*in.*, 4 4-*in.* A.A. 4 3-*pr.*	..	25	2000 / Oil	568

Cr.	**Lowestoft.** *See p.* 345.	5440	430	49	10	15	10	25,000	Chatham	Fairfield T.	1913	1914	375,162	..	..	9 *6-in.*, 4 *3-pr.*, 1 *3-in.* A.A., 2 M., 8 L.	2	25·5	1075 / 235	580
A. C.	**Pegasus** (late Stockholm)	3070	332	43	0	14	6	9,500 t	Clydeb'nk	J. Brown B.C.T.(G.)	1917	1917	..	..	..	4 *12-pr.* (2 A.A.), 14 M.	Nil.	20·25	360 / Oil	182
Minelayer	**Princess Margaret**	5440	395½	54	0	16	6	15,000	Dumbarton. Purchased 1919	Denny	1914 (Refitted 1921–22)	1914	..	..	..	2 *4-in.*, 2 *3-in.* A.A.	Nil.	22¼	585 / Oil	233
P. L. Cr.	**Vindictive** *ex* Cavendish *See p.* 341.	9750	565	65	0	20	4	60,000	Belfast	Harland & Wolff T.(G.)	1918	1918	..	..	..	3 *7·5 in.*, 3 *4-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms, 4 M., 8 L.	6 (2 sub.)	29·12 t	800 / 1420	680
L. Cr.	**Weymouth**	5250	430	48	6	15	6	22,000 Y.	Elswick	Parsons P. T.	1910	1911	337,738*	2¾	..	8 *6-in.*, 1 *12-pr.*, 1 *3-in.* A.A., 16 M.	2	25·5 t	1290 / 260	540
"	**Yarmouth** *See p.* 345.								Glasgow	London & Glas. Co. C. T.	1911	1912	353,238*							

* Total estimated cost of ship, including guns. † Estimated cost excluding armament and ordnance stores. ‡ Extreme breadth under water; 100 ft. over seaplane lifting rails.

There are a number of other vessels on the non-effective list which are being used for various purposes as repair ships, and other auxiliary work, including depôt ships for destroyers and submarines.

A programme of new construction has been approved for the years 1925–26 to 1929–30. This provides for four 10,000-ton cruisers in 1925–26, the Devonshire, London, Shropshire and Sussex, these have been laid down, two in 1926–27, and one in each succeeding year up to 1929–30, making nine in all.

In addition there will be seven 8000-ton cruisers laid down, one in 1926–27, and two in each succeeding year up to 1929–30.

In 1929–30 one aircraft carrier will also be laid down.

Defence Forces of the Dominions.

ROYAL AUSTRALIAN NAVY.

Class.	NAME.	Displacement.	Length.	Beam. (Extreme.)	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal. / Oil.	Complement.
		tons.	ft.	ft. in.	ft. in.						£	in.	in.			knots	tons.	
Cr.	Australia	10,000	—	—	—	—	Clyde Bank	—	Bldg.	..	.	..	..	..	..	..	..	..
	Canberra																	
L. Cr.	Adelaide	5550	430	49 10	15 10	25,000	Sydney	T.	1918	1922	..	..	..	9 6-*in.*, 4 3-*pr.*, 2 M., 1 3-*in.* A.A., 8 L.	2	25	860 / 500	450
"	Melbourne	5400	430	49 10	15 9	25,000	Birkenhead	Cammell Laird. T.	1912	1913	..	3	..	8 6-*in.*, 4 3-*pr.*, 2 M., 1 3-*in.* A.A., 8 L.	2	25·5	1148 / 271	510
"	Sydney						Glasgow	London & Glasgow Co. T.	1912	1913							1210 / 260	392
"	Brisbane						Sydney	Vickers T.	1915	1916							1196 / 260	490
Seaplane Carrier	—	6000	—	—	—	—	Cockatoo Island	—	Bldg.	—	—	—	—	—	—	—	—	—
Flot. Ldr.	Anzac	1670	315	31 10	11 1	36,000	Dumbarton	Denny T.	1917	1917	..	..	..	4 4-*in.* Q.F., 2 2-*pr.* A.A., 1 M., 4 L.	2	34	515 Oil	122

DESTROYERS.—"*River*" *Class* :—Huon, Parramatta, Swan, Torrens, Warrego, Yarra. Launched, 1910–15; Displacement, 700 tons; 10,900–11,300 H.P.; speed, 26·5–27 knots; armament, one 4-in, three 12-pdrs., three tubes.

"*S*" *Class* :—Stalwart, Success, Swordsman, Tasmania, Tattoo. Launched, 1918–19; Displacement, 1,075 tons; 27,000 H.P.; speed, 36 knots; armament, three 4-in., one 2-pdr., 6 tubes (4 21-in., 2 18-in.).

SUBMARINES.—Two new vessels building by Messrs. Vickers, Oxley and Otway launched 1926.

SLOOPS.—"*Flower*" *Class* :—Mallow, Marguerite, Geranium. Launched, 1915; Displacement, 1,250 tons; 2,000 H.P.; speed, 16·5 knots; armament, one 4·7-in., two 3-pr. A.A. Moresby (late Silvio) 1320 tons, length 276½ ft., 2,500 H.P., 17 knots, one 3-pr. Surveying vessel.

The Royal Australian Navy also includes the Cerberus, gunboat; Platypus, destroyer depôt ship; and certain armed patrol vessels taken up for the war service.

NEW ZEALAND NAVY.

LIGHT CRUISERS.—"*D*" *Class*:—Dunedin [p. 342]; completed, 1919 (Elswick). Diomede [p. 342]; completed 1922 (Vickers). Displacement, 4,750 tons; 40,000 H.P.; speed, 29 knots; armament, six 6-in., two 3-in. A.A., two M., four triple torpedo tubes; max. fuel, 1,050 tons oil; complement, 460.

EX-LIGHT CRUISER.—"*Pearl*" *Class*:—Philomel. (Training and Depôt-ship, Auckland.) Completed, 1892 (Devonport and Earle). Displacement, 2,575 tons; 7,500 H.P.; speed, 19 knots: armament, one 6-in., one 4-in., two 12-pr.; coal, 300 tons; original complement, 217.

NEWFOUNDLAND.

SLOOP.—"*Flower*" *Class*:—Lobelia. Completed 1916 (Simons). Displacement, 1,250 tons; 2,000 H.P.; speed, 16·5 knots; armament, two 4-in.

ROYAL CANADIAN NAVY.

LIGHT CRUISER.—"*Arethusa*" *Class*:—Aurora. Completed, 1914 (Devonport Dockyard and Parsons Co.). Displacement, 3,500 tons; 40,000 H.P.; speed, 29 knots; armament, two 6-in., six 4-in. Q.F., one 4-in. A.A., two M., four 21-in. tubes; oil, 729 tons; complement, 318. Paid off.

DESTROYERS.—"*M*" *Class*:—Patrician and Patriot. Completed, 1916 (Thornycroft). Displacement, 1000 tons; 27,500 H.P.; speed, 35 knots; armament, three 4-in., one 2-pr., four 21-in. tubes; oil, 256 tons (radius of action, 1,510 at 15 knots).

MINESWEEPERS.—Festubert and Ypres, stationed at Halifax; and Armentieres and Thiepval, stationed at Esquimalt.

The Stadacona is in service as depôt-ship at Halifax and the motor-vessel Naden as depôt-ship at Esquimalt.

SOUTH AFRICA.

SURVEYING SHIP.—"*Beaufort*" *Class*:—Protea (ex-Crozier). Twin-screw mine-sweeper, converted 1919. Displacement, 800 tons; 2,200 H.P.; speed, 16 knots; coal capacity, 181–185 tons; armament, one 3-pr. Transferred to South Africa, September, 1921.

TRAWLERS.—*Admiralty Type*:—Immortelle and Sonneblom (late Eden and Foyle). Armament, one 12-pr. Transferred to South Africa, September, 1921, for mine-sweeping instructional duties.

The gunboat Afrikander (late Tickler) is employed as depôt-ship at Simonstown.

ARGENTINE REPUBLIC.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	Garibaldi	6840	328	59¾	24	13,384	Sestri Ponente	1895	1896	752,000	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	2 *10-in.*, 10 *6-in.*, 6 *4·7-in.*, 4 *2·2-in.*, 2 M.	2	19·9 *t*	1000	500
a.c.	General Belgrano	7069	328	59¾	24	13,000	Leghorn	1897	1899	696,700	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	2 *10-in.*, 14 *6-in.*, 2 *3-in.*, 4 *2·2-in.*, 2 L., 2 M.	..	20·1 *t*	1000	500
a.c.	General San Martin	6773	328	59¾	24	13,000	Leghorn	1896	1898	688,200	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	4 *8-in.*, 10 *6-in.*, 6 *4·7-in.*, 4 *2·2-in.*, 2 L., 2 M.	4	19·8	1100	500
b.	Moreno / Rivadavia (*See p. 346.*)	27940	585	95½	28	39,500 B. & W. Curtis t.	Camden, N.J. (N.Y.S.B.Co.) / Quincy, Mass.	1911	1914 / 1915	2,200,000	12–10 K.S.	3–2	9–6 K.S.	9 K.S.	12–9 K.S.	6 K.S.	12 *12-in.*, 12 *6-in.*, 16 *4-in.*, 8 smaller.	2 sub.	22 *t*	1600 / 4000	1046
a.c.	Pueyrredon	6840	328	59¾	24	13,000 B.	Sestri Ponente	1898	1901	782,000	6–3 H.S.	1½	6 H.S.	5 H.S.	6 H.S.	6 H.S.	2 *10-in.*, 10 *6-in.*, 6 *4·7-in.*, 4 *2·2-in.*, 2 M.	..	20·1 *t*	1000	430

Moreno and Rivadavia have been refitted recently in U.S.A.

The old coast-defence ironclads Libertad and Independencia, 2300 tons, completed at Birkenhead in 1892–93, carry two 9·4-in., four 4·7-in., and four 3-pr. guns.

Cruiser Buenos Aires (Elswick, 1895), 4780 tons, two 8-in., four 6-in., six 4·7 in., three T.T., 23·2 knots on trial; river gunboats Patria (1894), 1070 tons, two 4·7 in., eight smaller, five T.T., Paraná and Rosario (Elswick, 1909), 1000 tons, two 6-in. howitzers, six 12-pr., twelve smaller, 15 knots. For destroyers, see Flotilla Tables.

The training-ship (cruiser) Presidente Sarmiento, 2750 tons; also the old cruiser Nueve de Julio (aviation training ship), 3570 tons, Elswick 1902. There are 14 transports and many auxiliaries, and 18 additional have recently been acquired in Europe.

BRAZIL.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkheads.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Secondary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c.d.s., t.	**Marshal Floriano**	3162	267½	48	13¼	3400 D'A.	La Seyne	1899	1901	..	13¾–4 H.S.	1½	..	..	8 H.S.	3 H.S.	2 *9·4-in.*, 4 *4·7-in.*, 2 M., 4 *6-pr.*, 2 *1-pr.*	2 (sub.)	15·0	236	200
b.	**Minas Geraes** *See p. 347.*	19,281	500	83	25	27,212 *t* B.&W.	Elswick	1908	1909	1,821,400	9–6–4 K.S.	2	9–6–4 K.S.	9	12–8 K.S.	9 K.S.	12 *12-in.*, 22 *4·7-in.*, 8 *3-pr.*, 2 *3-in.* A.A.	4	21·5 *t*	2360 / 350	900
b.	**São Paulo** *See p. 347.*	19,281	500	83	25	28,645 *t* B.&W.	Barrow	1909	1910	1,821,400	9–6–4 K.S.	2	9–6–4 K.S.	9 K.S.	12–8 K.S.	9 K.S.	12 *12-in.*, 22 *4·7-in.*, 8 *3-pr.*, 2 *3-in.* A.A.	4	21·5 *t*	2360 / 350	900

The Minas Geraes and São Paulo have been completely refitted at the Brooklyn Navy Yard (1917-1919).

LIGHT CRUISERS:—Bahia and Rio Grande do Sul, completed at Elswick, 1910, reconstructed at Rio de Janeiro, 1926, 3100 tons, ten 4·7-in., six 1·8-in. guns, 20,000 H.P., 27 knots; Barroso (Elswick, 1897), 3600 tons, six 6-in., four 4·7-in. guns, 20 knots. Three 11-knot river gunboats, Missões, Teffé and Awapa.

MINELAYERS:—Maria do Couto, Carneiro da Cunha, Heitor Perdigao and Muniz Freire.

Also river monitors Maranhao and Pernambuco, built at Rio de Janeiro. The Marorhas is being converted into a gunboat scout at Rio de Janeiro, to be called Espirito Santo.

CHILE.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Almirante Latorre (ex Canada) *See p. 348.*	28,000	625	92 0	28 6	37,000 P. tur. Y 2	Elswick	1913	1915	..	9–4 A.I.	4–2½	4½	..	10	6	10 *14-in.*, 14 *6-in.*, 2 *3-in.* and smaller	4 sub.	23	3300 / 520	1000
s.o.	O'Higgins	8,500	412	62 9	22 0	16,000 B.	Elswick	1897	1898	..	7–5	2	..	..	7½–6	6	4 *8-in.*, 10 *6-in.*, 10 *12-pr.*, 10 *6-pr.*, 4 M.	3 (2 sub.)	21·5 t	1260	500
b.	Capitan Prat	6,900	328	60 9	22 9	12,000	La Seyne	1890	1893	391,000	12	3	4	..	10½	2	4 *9·4-in.* (Canet), 8 *4·7-in.* (Canet), 10 *6-pr.*, 14 smaller and M.	4	18·3 t	775	500
a.c.	Esmeralda	7,020	436	53 3	20 3	16,000	Elswick	1896	1897	..	6 H.S.	2	..	6 H.S.	4½ Shields	..	2 *8-in.*, 12 *6-in.*, 12 *12-pr.*, 2 *3-pr.*, 4 M.	2	22·8 t	1350	500

Capitan Prat reconstructed in 1909.

Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft. ins.	ft. ins.						in.	in.			knots.	tons.	
cr.	Blanco Encalada	4400	370	46 6	19 6	14,500	Elswick	1893	1894	..	4–1¾	..	2 *8-in.*, 10 *6-in.*, 4 *12-pr.*, 8 *3-pr.*, 4 *1-pr.**	5	22·78 t	850	427
,,	Chacabuco	4500	360	46 6	17 0	15,500	Elswick	1901	1903	..	4½–1¾	..	2 *6-in.*, 10 *4·7-in.*, 12 *1·8-in.*, 2 M., 1 l.	5	23·0	1000	400
,,	General Baquedano (Training)	2330	240	45 9	18 0	1500 B.	Elswick	1898	1900	..	..	..	4 *4·7-in.*, 2 *12-pr.*, 2 *6-pr.*, 2 M., 1 l.	1	13·7 t.	300	302
,,	Ministro Zenteno	3600	330¼	43 9	16 9	6500	Elswick	1896	1898	..	..	..	8 *6-in.*, 10 *6-pr.*, 4 *1-pr.**	3	20·0t	800	280
,,	Presidente Errázuriz (Dismantled)	2047	268	35 9	19 6	5400	La Seyne	1890	1892	..	3½	..	4 *6-in.* (Canet), 2 *5-in.*, 4 *2·2-in.*, 6 M.	3	19·0	200	171

* Armstrong.

Transports: Maipo, 11,000 tons; Rancagua, 10,000 tons; Angamos, 5,000 tons. Sloops or patrol vessels: Orompello, Leucoton, Elicura, Colocolo, 500 tons; Aguila 820, tons; Porvenir, 450 tons.

DENMARK.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c.d.s.,t.	Herluf Trolle	3595	271 9	49 6	16 6	4400 T.	Copenhagen	1899	1901	..	7–4 H.S.	3	..	..	7 H.S.	6 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 6 *14-pr.*, 2 *6-pr.*	3 (sub.)	16·0	250	250
c.d.s.,t.	Niels Juel	4100	295 0	53 6	15 9	5500	Copenhagen	1918	1923	..	8–4 K.S.	2	..	7	..	2 K.S.	10 *5·9-in.*, 3 *6-pr.*	2 (sub.)	17·0	250 / 240	250
c.d.s.,t.	Olfert Fischer	3650	271 9	50 6	16 9	4600	Copenhagen	1903	1905	..	7–4 K.S.	3	..	..	7 K.S.	6	2 *9·4-in.*, 4 *5·9-in.*, 6 *14-pr.*, 2 *6-pr.*	3 (sub.)	16·0	250	250
c.d.s.,t.	Peder Skram	3735	275 3	51 6	16 3	5400	Copenhagen	1908	1909	..	8–4 K.S.	2	..	..	7 K.S.	6 K.S.	2 *9·4-in.*, 4 *5·9-in.*, 10 *14-pr.*, 2 *1-pr.*	4	16·0	250	250
c.d.s.,t.	Skjold	2200	226 6	38 0	13 6	2400 T.	Copenhagen	1896	1899	..	10–3 H.S.	2	..	7	8	5½	1 *9·4-in.*, 3 *4·7-in.* (K.), 4 *6-pr.*	4	13·0	280	210

Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.				tons.	
3rd cl. cr.	Geiser	1280	232	34	11½	3600 T.	Copenhagen	1892	1893 1907	..	1½	..	2 *4·7-in.*, 4 *20-pr.*, 4 *6-pr.*	2	17·1 *t*	150	155
„	Heimdal	1313	232	34	11½	3100 T.	Copenhagen	1894	1896	..	1½	..	2 *4·7-in.*, 4 *20-pr.*, 4 *6-pr.*, 6 M.	2	17·5	150	155

Heimdal, now in reserve. Mine-layers Lossen, Minekran 4–6, Mining boats 1–10. Fylla (ex-British sloop Asphodel), and 4 other fishery inspection cruisers. Groensund, submarine repair ship, Hekla, submarine depôt. Three surveying ships.

FRANCE.—Armoured Ships.

Class.	NAME. DATE FOR SCRAPPING.‡	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	**Bretagne** . . 1934 *See p.* 349.	23,177	544 6	88 6	29 0	29,000 N. tur.	Brest .	1913	1915	2,589,439	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	10 *13·4-in.*, 18 *5·5-in.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2700 / 300	1167
b.	**Condorcet**. . *See p.* 351.	18,600	475 9	84 7	27 0	22,500 N. tur.	St. Nazaire	1909	1911	2,165,200	10–8 K.S.	2¾	8¾	..	12 K.S.	8¾ K.S.	4 *12-in.*, 12 *9·4-in.*, 12 *3-in.*, 2 *3-pr.*, 4 *14-pr.* A.A.	2 (sub.)	19·25 *t*	2100 / Coal.	690
b.	**Courbet** . . 1930 *See p.* 350.	23,500	541 4	88 6	29 0	28,000 N. tur.	Lorient .	1911	1913	2,508,388	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	12 *12-in.*, 22 *5·5-in.*, 4 *3-pr.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2450 / 250	998
b.	**Diderot** . . *See p.* 351.	18,600	475 9	84 7	27 0	22,500 N. tur.	St. Nazaire	1909	1911	2,167,000	10–8 K.S.	2¾	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 12 *3-in.*, 2 *3-pr.*, 4 *14-pr.* A.A.	2 (sub.)	19·25 *t*	2100 / Coal.	690
a.c.	**Edgar Quinet** . *See p.* 353.	13,828	515 0	70 7	27 6	39,803 *t* B.	Brest .	1907	1911	1,307,536	6½–3½ K.S.	2½–1¼	5–2 K.S.	4¾ K.S.	8 K.S.	4¾ K.S.	14 *7·6-in.*, 10 *9-pr.*, and smaller	2 (sub.)	23·0 *t*	1900 / Coal.	738
a.c.	**Ernest Renan** . *See p.* 352.	13,500	515 0	70 0	27 6	37,500 Nic., *t*	St. Nazaire	1906	1909	1,410,000	6¾–4 H.S.	2	5–3 H.S.	4¾	6 H.S.	5 H.S.	4 *7·6-in.*, 12 *6·5-in.*, and smaller	2 (sub.)	23·0 *t*	2300 / Coal.	674
b.	**Jean Bart** . 1930 *See p.* 350.	23,500	541 4	88 6	29 0	28,000 B. tur.	Brest .	1911	1913	2,528,888	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	12 *12-in.*, 22 *5·5-in*, 4 *3-pr.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2450 / 250	998
a.c.	**Jules Ferry** *See p.* 352.	12,400	487 0	70 3	27 0	30,500 Guyot	Cherbourg	1903	1906	1,169,940	6¾–4 H.S.	2	5–3 H.S.	6	6 H.S.	5 H.S.	4 *7·6-in.*, 14 *6·4-in.*, 24 smaller	2 (sub.)	22·0 *t*	1900 / Coal.	728
a.c.	**Jules Michelet**. *See p.* 352.	12,400	489 0	70 3	27 0	27,700 Guyot	Lorient .	1905	1908	1,204,107	6–4 K.S.	2	5–3 K.S.	6 H.S.	8 K.S.	5 K.S.	4 *7·6-in.*, 12 *6·5-in.*, and smaller	2 (sub.)	22·0 *t*	2100 / Coal.	724

b.	**Lorraine** . 1936 *See p.* 340.	23,177	544	6	88	6	29	0	29,000 tur. S. & cyl.	St. Nazaire	1913	1916	2,642,489	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	10 *13·4-in.*, 18 *5·5-in.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2700 / 300	1167
b.	**Paris** . 1934 *See p.* 350.	23,500	541	4	88	6	29	0	28,000 N. tur.	La Seyne	1912	1914	2,603,920	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	12 *12-in.*, 22 *5·5-in.*, 4 *3-pr.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2450 / 250	998
b.	**Provence** . 1935 *See p.* 349.	23,177	544	6	88	6	29	0	29,000 tur.	Lorient	1913	1915	2,589,000	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	10 *13·4-in.*, 18 *5·5-in.*, 4 *14-pr.* A.A.	4 (sub.)	20·0	2700 / 300	1167
a.c.	**Victor Hugo** . *See p.* 352.	12,400	480	6	70	3	27	0	28,486 *t.* B.	Lorient	1904	1907	1,229,932	6¾–4 H.S.	2	5-3 H.S.	6	8 H.S.	5 H.S.	4 *7·6-in.*, 16 *6·4-in.*, 24 smaller	2 (sub.)	22·0 *t*	1900 / Coal	728
b.	**Voltaire** . *See p.* 351.	18,600	475	9	84	7	27	0	22,500 B. tur.	La Seyne	1909	1911	2,169,200	10–8 K.S.	2¾	8¾	..	12 K.S.	8¾ K.S.	4 *12-in.*, 12 *9·4-in.*, 12 *3-in.*, 2 *3-pr.*, 4 *14-pr.* A.A.	2 (sub.)	19·25 *t*	2100 / Coal	690
a.c.	**Waldeck-Rousseau** . *See p.* 353.	13,828	515	0	70	7	27	6	35,286 Nic. *t.*	Lorient	1908	1911	1,301,880	6½–3½	2½	5	4¾	6	5½	14 *7·6-in.*, 10 *9-pr.*, and smaller	2 (sub.)	23·0 *t*	1900 / Coal	738

The battleship France, lost by striking a rock at Quiberon Bay, August 25, 1922, belonged to the Fleet authorised by the Treaty of Washington, but no provision has been made to replace her. In the case of the battleships Condorcet, Diderot, and Voltaire, the date of scrapping has not been indicated.

The uncompleted battleship Béarn is being converted into an aircraft carrier at Toulon. She will be completed this year.

The armoured cruisers Condé, Gueydon, Marseillaise, Montcalm, and Jeanne d'Arc (1902–4) are retained temporarily as Training Ships.

FRANCE.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour: Belt.	Armour: Gun Position.	Armament: Guns.	Armament: Torpedo Tubes.	Speed.	Fuel.	Complement.
		tons.	ft.	ft. ins.	ft. ins.					£	in.	in.			knots.	tons.	
l. cr.	**Suffren**	10,000	..	..	..	..	Brest	Bldg.	..	..	..	..	8 *8-in.*, 8 *3·5-in.* A.A., 8 *1·5-in.* A.A.	2 triple	33	..	..
„	**Tourville**	10,000	607	62 4	19 6	120,000	Lorient	1926	..	..	..	..	8 *8-in.*, 8 *2·9-in.* A.A., 8 *3-pr.*; 2 seaplanes	2 triple	34–35	oil	
„	**Duquesne** *See p. 354.*						Brest	1926									
„	**Duguay-Trouin** *See p. 355.*	8000	575	56 6	17 0	100,000	Brest	1923	1926	..	..	..	8 *6-in.*, 6 l. & M.; 2 seaplanes; 4 *2·9-in.* A.A.	4 triple	34	oil	..
„	**La Motte Picquet** *See p. 355.*	8000	575	56 6	17 0	100,000	Lorient	1924	1926	..	..	..	8 *6 in.*, 6 l. & M.; 2 seaplanes; 4 *2·9-in.* A.A.	4 triple	34	oil	..
„	**Metz** (*ex*-Königsberg) *See p. 356.*	6100	489†	47 0	16 6	40,000	Bremen(Weser)	1915	1916	..	$2\frac{1}{2}$	1	8 *5·9-in.*, 2 *2·9-in.* A.A., 4 M.	2 sub. 2 aw.	27·5	1270 / 500	500
„	**Mulhouse** (*ex*-Stralsund) *See p. 357.*	5120	$446\frac{1}{4}$†	43 7	16 9	35,515 *t* (tur.)	Bremen(Weser)	1912	1913	416,340	4–$2\frac{1}{2}$	2	7 *5·9-in.*, 2 *2·9-in.* A.A., 2 M. (Rearmed)	2 (sub.)	28·27 *t*	1200 / 130	373
„	**Primauguet** *See p. 355.*	8000	575	56 6	17 0	100,000	Brest	1924	1926	..	..	..	8 *6-in.*, 6 l. & M.; 2 seaplanes; 4 *2·9 in.* A.A.	4 triple	34	oil	..
„	**Strasbourg** (*ex*-Regensburg) *See p. 356.*	4900	456†	45 0	17 0	30,000 (P. tur.)	Bremen(Weser)	1914	1914	417,810	4–$2\frac{1}{2}$	2	6 *5·9-in.*, 2 *2·9 in.* A.A., 4 M. (Rearmed)	4 (sub.)	27·0	1200 / 380	373
„	**Thionville** (*ex*-Novara) *See p. 357.*	3500	$410\frac{3}{4}$	42 0	15 6	25,000 (tur.)	Fiume	1913	1914	..	$2\frac{1}{2}$	..	9 *3·9-in.*, 1 *14-pr.* A.A.	2 twin 1 triple	27·0	800 coal	320

† Water-line.

One 10,000 ton cruiser will be commenced in 1926 and two more are projected. The Commandant Teste, 10,000-tons, length 525 ft., beam 82 ft., 20–22 knots, aviation transport, will also be commenced in 1926.

During the war, and subsequently, the following sloops, despatch vessels, and gunboats (350-1250 tons, 17-22 knots) have been built: Algol, Altaïr, Aldebaran, Antarès, Bellatrix, Cassiopée, Régulus, Quentin-Roosevelt, Dubordieu, Dumont d'Urville, Du Couëdic, Du Chaffault, Duperré, Ancre, Ailette, Arras, Bapaume, Escaut, Marne, Oise, Somme, Coucy, Nancy, Amiens, Aisne, Epernay, Lunéville, Péronne, Mondemart, Montmirail, Reims, Verdun, Belfort, Epinal, Vauquois, Vimy, Vitry-le-François, Les Eparges, Lassigny, Remiremont, Revigny, Calais, Craonne, Liévin, Baccarat, Béthune, Scarpe, Suippe, Yser, Tahure, Dunkerque, Toul, Ville d'Ys, and Meuse. In this series the vessels bearing the names of stars are sloops, and carry two 5·5-in. and two 6-prs.; the gunboats named after old seamen, one 5·5-in. and one 3·9-in.; those named in honour of towns famed in the war, two 5·5-in., one 12-pr. and 2 M.; and those bearing the names of rivers known in the war, four 3·9-in. and five smaller. In addition there are 10 river gunboats.

Twenty-four mine-sweepers of the Belliqueuse type, and five of the Granit Class. Submarine chasers fifty-one (internal-combustion engines), fifteen (coal). Vulcain, 10,400 tons, repair ship.

GERMANY.

In the following list the letter R implies that the ships so marked are to be retained in reserve with their armament, but to have no ammunition on board.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Secondary.	Armament. Guns. The 12-prs. are field guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Braunschweig	12,997	398½	73½	24½	16,000 T.S. & C.	Germania	1902	1904	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 12 *6·7-in.*, 8 light and 23 machine	4 a.w.	18·0	700 / 1600	743
b.	Elsass	12,997	398½	72¾	24½	16,812 W.T.& C.	Danzig (Schichau)	1903	1905	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 10 *6·7-in.*, 8 light and 23 machine	4 a.w.	18·7	800 / 1600	743
b.	Hannover	13,040	398½	73¾	25¼	22,492 T.S. *t.*	Wilhelmshaven	1905	1907	1,157,500	9½–4 K.S.	3	8 K.S.	6 K.S.	10–6 K.S.	6¾ K.S.	4 *11-in.*, 14 *6·7-in.*, 12 light and 23 machine	4 a.w.	19·16 *t*	700 / 1800	743
b.	Hessen	12,997	398½	73¾	24½	16,000 T.S. & C.	Kiel (Germania)	1903	1905	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *6·7-in.*, 18 light and 23 machine	5 (1 sub. 4 a.w.)	18·0	800 / 1600	743
b.	R Lothringen	12,997	398½	73¾	24½	16,950 W.T.&C.	Schichau (Danzig)	1904	1906	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *6·7-in.*, 18 *3·4-in.*, 23 machine	5 (1 sub. 4 a.w.)	18·54 *t*	800 / 1600	743
b.	R Preussen	12,997	398½	73¾	24½	18,374 W.T.& C.	Stettin	1903	1905	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *6·7-in.*, 18 *3·4-in.*, 23 machine	5 (1 sub. 4 a.w.)	18·6 *t*	1574 / 1600	743
b. / b.	Schlesien / Schleswig-Holstein	13,040	398½	72¾	25¼	16,939 T.S. & C.	Schichau / Germania	1906	1908	1,214,000	9½–4 K.S.	3	8 K.S.	6 K.S.	11–6 K.S.	6¾ K.S.	4 *11-in.*, 14 *5·9-in.*, 20 *3·4-in.*, 23 machine	5 (1 sub. 4 a.w.)	19·2 / 19·5 *t*	700 / 1800	743

The Hannover in the Baltic and the Braunschweig in the North Sea have been the only battleships in commission. The Lothringen, Preussen and Braunschweig are paid off; considered too old for further use.

Light Cruisers.—One light cruiser is building at Wilhelmshaven, 6000 tons, 27½ knots, and two more are projected. Emden (6000 tons), completed 1925, length 508 ft. 6 ins., beam 46 ft. 11 ins., draught 17 ft. 4 ins., 30,000 h.-p., 27½ knots, 8 *6-in.*, 3 *22-pr.*, 4 torpedo tubes. Medusa, Thetis, and Amazone (2630 tons), completed 1901; Arkona, 1903; Hamburg, 1904; Berlin, 1905, all mounting ten *4·1-in.* guns. Also the Nymphe and Niobe (1899, 1901), these two to retain armament, but to have no ammunition on board. Both are now out of the service.

Surveying vessels Meteor and Panther. Gunboats Drache, Fuchs, Hay, Delphin.

GREECE.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a c.	Giorgios Averoff *See p. 359.*	9956	429¾	69	24¾	20,000 B	Leghorn (Orlando)	1910	1911	1,100,000	8–3½ K.S.	1¾	7	7	8–6½	7	4 9·2-*in.*, 8 7·5-*in.*, 16 3-*in.*, 4 3-*pr.*, 1 12-*pr.* A.A.	3 (sub.)	24·0 *t.*	700 / 1600	..
b.	Kilkis (*ex* Mississippi)																				
b.	Lemnos (*ex* Idaho) *See p. 359.*	13,000	375	77	24¾	13,607 B.&W.	Phila-delphia	1905	1908	616,360	9–4 K.S.	3½–1 K.S.	7 K.S.	7 K.S.	10–7½ K.S.	6 K.S.	4 12-*in.*, 8 8-*in.*, 8 7-*in.*, 12 3-*in.*, 14 smaller	2 (sub.)	17·1 *t.*	750 / 1820	725
b.c.	Salamis (*ex* Vasilefs Giorgios)	19,500	570¾	82	25¼	40,000	Hamburg	1914	Bldg.	..	..	..	..	.	..	..	8 14-*in.*, 12 6-*in.*, 12 12-*pr.*	2 (sub.)	24	..	..

The old battleships Hydra, Psara, and Spetsai are used in the training service. The Salamis is still in the same condition as when launched.

GREECE.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
cr.	Helle (*ex* Fei-Hung)	2600	330	39	14	6500 tur.	Camden, N.J.	1912	1914	240,000	¾	..	2 6-*in.*, 4 4-*in.*, 4 6-*pr.*, 1 A.A.	2	20	600 / 100	..

Two old gunboats, Aidon, 86 tons, and Amvrakia, 470 tons. One mine-layer building at Venice, 430 tons. Six C.M.B.'s suitable for conversion to mine-layers are building. The Helle is shortly to be repaired in France and fitted as a mine-layer. Several armed merchantmen.

ITALY.—Armoured Ships.

Class.	NAME. DATE FOR SCRAPPING.*	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft. ins.	ft. ins.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Andrea Doria 1937	22,600	554 4	92 0	29	32,000 P. tur. Y.	Spezia	1913	1915	..	10–4 K.S.	1¾	6 K.S.	..	9½ K.S.	6 K.S.	13 12-in., 16 6-in., 13 14-pr., 6 14-pr. A.A., 2 M., 4 L.	3 (sub.)	22	1200 / 800	1074
b.	Caio Duilio 1936 See p. 360.						Castellammare	1913	1915												
b.	Conte di Cavour 1936 See p. 361.	22,023	554 4	92 0	29	24,000 Parsons B. & W.	Spezia	1911	1915	..	10–4½ K.S.	1¾	6 K.S.	..	9½ K.S.	5 K.S.	13 12-in., 18 4·7-in., 13 14-pr., 6 14-pr. H.A.	3 (sub.)	22·0	1300 / 850	999
b.	Dante Alighieri 1931 See p. 362.	19,400	519 8½	87 5	29	35,000t Parsons Bl.	Castellammare	1910	1912	..	9½–4½ K.S.	1½	6 K.S.	..	10 K.S.	4	12 12-in., 20 4·7-in., 12 14-pr., 6 14-pr. H.A.	3 (2 sub.)	23·0 t	1300 / 750	900
b.	Giulio Cesare 1935 See p. 361.	22,023	554 4	92 0	28	24,000 P. B.&W. P. Bl.	Genoa (Ansaldo)	1911	1914	..	10–4½ K.S.	1¾	6 K.S	..	9½ K S.	5 K.S.	13 12-in., 18 4·7-in., 13 14-pr., 6 14-pr. H.A.	3 (sub.)	22·0 t	1300 / 850	999
b.	Napoli	12,660	435 0	73 6	27¼	20,000 B.&W.	Castellammare	1905	1909	1,120,000	9¾–4 H.S.	2	8 H.S.	8 H.S.	8 H.S.	6 H.S.	2 12-in., 12 8-in., 16 14-pr., 2 3-pr.	2 (sub.)	22·0	2000 Coal	711
a.c.	Pisa See p. 363.	10,600	426 6	68 11	24¾	18,000 B.	Leghorn (Orlando)	1907	1908	..	8–3½ K.S.	1¾	7 K.S.	7 K.S.	8–6 K.S.	6½	4 10-in., 8 7·5-in., 14 14-pr., 6 14-pr. H.A.	3 (sub.)	23·0	1600 Coal	687
b.	Roma	12,660	435 0	73 6	27¼	20,000 B. & W.	Spezia	1907	1909	1,120,000	9¾–4 H.S.	2	8 H.S.	8 H.S.	8 H.S.	6 H.S.	2 12-in., 12 8-in., 16 14-pr., 2 3-pr.	2 (sub.)	22·0	2000 Coal	711
a.c.	San Giorgio	10,800	429 10	69 0	24¾	18000 Bl.	Castellammare	1908	1910	..	8–3½ K.S.	1¾	7 K.S.	7 K.S.	7–6 K.S.	7 K.S.	4 10-in., 8 7·5-in., 10 14-pr., 6 14-pr. H.A.	3 (sub.)	22·5	1600	643
a.c.	San Marco See p. 363.	10,000				18000 tur.													23 0	Coal	

The Leonardo da Vinci, sister of the Giulio Cesare, was raised and taken into dock with the intention of reconstruction, but there is now no intention to complete her for service. She has been removed from the Italian Navy List. The old battleships Regina Elena and Vittorio Emanuele have also been removed, but the Napoli and Roma of the same class remain. The old armoured cruiser Francesco Ferruccio is now employed for the training of cadets. Monitor Faa di Bruno, 2,809 tons, 2 *15-in.*, 4 *14-pr.*, A.A. There are also four small river monitors, Monte Cengio, Monte Rovegno, Monte Grappa, and Montello, 575 tons, one *15-in.*, one machine-gun.

In the case of the Napoli and Roma the date of scrapping under the Treaty of Washington has not been indicated.

ITALY.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Side. / Deck.	Armour. Gun Position.	Armaments. Guns.	Armaments. Torpedo Tubes.	Speed.	Fuel.	Complement.
		tons.	ft. ins.	ft. ins.	ft.					£	in.	in.			knots.	tons.	
l. cr. / l. cr.	Trieste / Trento (See p. 364.)	10,000	640 9†	67 7	18¾	150,000	Leghorn (Orlando) / Trieste	Bldg.	..	..	..	..	8 8-*in.*, 12 4-*in.* A.A., 2 sea-planes	4 (win)	35–36	..	..
,,	Ancona (ex German Graudenz) (See p. 367.)	4842	456 0	45 0	17	27,400	Kiel	1913	1914	..	4–2½ / 1	.	7 5·9-*in.*, 2 22-*pr.* A.A., 120 mines	4 (2sub.)	27·5	1279	364
Scout	Aquila	1550	310 0	31 0	10½	40,000	Naples (Pattison)	1915	1916	..	..	..	4 4·7-*in.*, 4 14-*pr.* A.A., carries 50 mines	4	35·0	260 Oil.	160
,,	Augusto Riboty	1800	331 0	32 0	10½	43,100	Genoa (Ansaldo)	1915	1916	..	..	..	8 4-*in.*, 2 2-*pr.* A.A.; carries 100 mines	4	35·0	350 Oil.	160
l. cr.	Bari (ex-German Pillau) (See p. 365.)	4320	441 0†	46 0	19½	27,400 turb.	Danzig (Schichau)	1914	1914	..	— / 1½–¾	1	8 5·9-*in.*, 3 3-*in.* A.A. (Re-armed). Can carry 120 mines.	2	27·5	1000	372
,,	Brindisi (ex-Austrian Helgoland) (See p. 366.)	3440	416 9	42 0	15½	25,000 Tur.	Fiume	1912	1914	..	2½ / ¾	..	9 3·9-*in.*, 1 3-*in.* A.A	6	27·0	450 / 750	320
,,	Campania	2444	250 6	41 6	14·6	5000	Castellammare	1914	1916	..	1	..	6 6-*in.*, 2 14-*pr.*, 2 3-*in.* A.A., 5 l., 2 M.	2	17·0	700	240
Scout	Carlo Mirabello	1800	331 0	32 0	10½	43,100	Genoa (Ansaldo)	1914	1916	..	..	..	8 4-*in.*, 2 2-*pr.* A.A.; carries 100 mines	4	35·0	350 Oil.	160
,,	Falco	1550	310 0	31 0	10½	38,100	Naples (Pattison)	1917	1918	..	..	..	5 4·7-*in.*, 4 14-*pr.* A.A.; carries 50 mines	2 dbl.	35·0	260 Oil.	160
,,	Leone	2165	359 6	33 6	11¼	50,000 turb.	Genoa (Ansaldo)	1923	1924	..	..	..	8 4·7-*in.*, 2 14-*pr.* A.A., 2 M.; mining equipment	6	35·0	400 Oil.	..
l. cr.	Libia	4000	341 6	47 6	16	12,500	Genoa (Ansaldo)	1912	1913	..	— / 1½	..	8 4·7-*in.*, 6 smaller	2	22·0	630 Coal.	300
,,	Marsala (See p. 366.)	3600	430 0	42 0	13¼	22,500 P.tur.Bl	Castellammare	1912	1914	..	— / 1½–¾	..	6 4·7-*in.* and 6 14-*pr.*, 2 2-*pr.* A.A., 150 mines	2	28·0	800	240
A.C.	Miraglia	5000	377 0	49 0	17	12,000	Spezia	1923	1925	..	..	..	6 3 *in.* or 4-*in.* A.A	..	21·5	..	..

† Water lino.

l. cr.	**Nino Bixio** *See p. 366.*	3600	430	0	42	9	13¼	22,500 Bl.Cur.t.	Castellammare	1911	1914	..	— 1½–¾	..	6 *4·7-in.* and 6 *14-pr.*, 2 *2-pr.* A.A., 150 mines	2	28·0	800	300
Scout	**Pantera**	2165	359	6	33	6	11¼	50,000 turb.	Genoa (Ansaldo)	1924	1925	..	..	..	8 *4·7-in.*, 2 *14-pr.* A.A., 2 M., mining equipment	6	35·0	400 Oil.	100
„	**Premuda** (*ex* German V. 116)	2500	334	6	36	0	14	45,000 approx.	Hamburg	1918	1919	..	..	..	4 *5·9-in.*, 2 *14-pr.* A.A.	4 *23·6 in.*	35·0	720 Oil.	..
l. cr.	**Quarto** *See p. 367.*	3220	413	6	43	9	13¼	20,000 P.tur.Bl.	Venice	1911	1912	..	— 1½–¾	..	6 *4·7-in.* and 6 *14-pr.*, 2 *2-pr.* A.A., 150 mines	2	28·0	450	240
l. cr.	**Taranto** (*ex*-German Strassburg) *See p. 365.*	4480	446	3†	43	6	15¾	25,650 *t* P. tur.	Wilhelmshaven	1912	1912	416,340	4–2½ —	2	7 *5·9-in.*, 2 *3-in.* A.A., 2 M. (Rearmed). Can carry 120 mines.	2 (sub.)	26·9 *t*	1200	373
Scout	**Tigre**	2165	359	6	33	6	11¼	50,000 turb.	Genoa (Ansaldo)	1924	1925	..	..	8	8 *4·7-in.*, 2 *14-pr.* A.A., 2 M., mining equipment	6	35·0	400 Oil.	..
l. cr.	**Venezia** (*ex*-Austrian Saida) *See p. 366.*	3440	416	9	42	0	15½	25,000 Tur.	Monfalcone	1912	1914	..	2½ †	..	9 *3·9-in.*, 1 *3-in.* A.A.	6	27·0	450 850	320

Three 10,000-ton cruisers are projected.
The scouts have been built to act also as flotilla leaders.
Mine-layers Fasana, Buccari, Durazzo, Pelagosa, completed 1916, 600 tons, 11 knots, 200 mines; Albona, Laurana, Rovigno, ex-M. 130, 131, 132; Brondolo, Marghera, 115 tons, 13 knots. The following combined mine-layers and mine-sweepers are building: Azio, Legnano, Lepanto, Dardanelli, Milazzo, Ostia, 700 tons, 15 knots. Ansonia, mine-sweeper. Oil transports Bronte (9490 tons), Livenza, Mincio, Urano, Marte, Prometeo, Cocito, Lete, Stige, Niobe, Cerrere, Istria, Dalmazia; building Tarvisio, Quarnero. Oil transport with under-water protection, Brennero. Coal transports, Barbana, Fianona. Anteo, submarine salvage vessel, 21,000 tons, 6 knots, raising 400 tons. Gunboats and river gunboats, Viesta, Cotrone, Giuliana, Archimede, Toselli, Arimondi, S. Caboto, E. Carlotto. Escort gunboats, A. Bafilo, T. Farinati, E. Giovannini, C. del Greco, A. Vitturi. Surveying vessel, Ammiraglio Magnaghi, 1800 tons, 14 knots. During the war a great number of motor chasers (M.A.S.) were bought and built, and at the beginning of 1921 about 350 of these were still on the list, but many have since been scrapped and sold.
Training ship Patria is building at Castellammare di Stabia.

† Water line.

JAPAN.—Armoured Ships.

From this list the ships to be scrapped under the Washington Treaty, both those built and building, have been removed with one exception as a record.

Class.	NAME. DATE FOR SCRAPPING.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.†
		tons.	ft. ins.	ft. ins.	ft. ins.						in.	in.	in	in.	in.	in.			knots.	tons.	
A.c.	Akagi ‡	33,000	850 0	103 0	30 0	170,000 (G.)	Kure	1925	Bldg.	..	..	..	..	..	..	..	Reported stowage for from 50–70 aircraft	..	33·0	..	..
b.	Fuso * 1937 *See p.* 370.	30,600	630 0	94 0	28 6	40,000 tur.	Kure	1914	1915	..	12 K.S.	3	8 K.S.	..	12 K.S.	6 K.S.	12 *14-in.*, 16 *6-in.*, 4 *12-pr.* A.A.	6 (sub.)	22·5	4000 / 1000	1272
b.	Hyuga * 1940 *See p.* 369.	31,260	640 0	94 0	28 6	45,000 tur.	Nagasaki (Mitsubishi)	1917	1918								12 *14-in.*, 20 *5·5-in.*, 4 *12-pr.* A.A.	6 (sub.)	23·0	4000 / 1000	1360
b.c.	Haruna * 1935	27,500	653 6	92 6	27 0	64,000 My. P. t. My. C. t.	Kobe (Kawasaki)	1913	1915	..	8–3 K.S.	$2\frac{3}{4}$	6	..	10 K.S.	6 K.S.	8 *14-in.*, 16 *6-in.*, 4 *12-pr.*, A.A.	8 (sub.)	27·5	4000 / 1000	1250
„	Hiyei * 1935 *See p.* 371.			92 0	27 6		Yokosuka	1912	1914												
b.	Ise * 1939 *See p.* 369.	31,260	640 0	94 0	28 6	45,000 P. tur.	Kobe (Kawasaki)	1916	1917	..	12 K.S.	3	8 K.S.	..	12 K.S.	6 K.S.	12 *14-in.*, 20 *5·5-in.*, 4 *12-pr.* A.A.	6 (sub.)	23·0	4000 / 1000	1360
A.c.	Kaga ‡	27,000	700 0	100 0	28 0	60,000	Kobe (Kawasaki)	1921	Bldg.	..	14 K.S.	.	..	..	..	..	..	8	27·0	..	..

† The complements of Japanese ships vary considerably from time to time. Those given are according to the latest reports.

b.c.	**Kirishima** * . 1936 *See p.* 371.	27,500	653	6	92	6	27	0	64,000 My. P. t.	Nagasaki . (Mitsubishi)	1913	1915	..	8–3 K.S.	2¾	6	..	10 K.S.	6 K.S.	8 *14-in.*, 16 *6-in.*, 4 *12-pr.*, A.A.	8 (sub.)	27·5	4000 / 1000	1250
,,	**Kongo** * . 1934 *See p.* 371.	27,500	653	6	92	0	27	6	64,000 Y. P. t.	Barrow .	1913	1913	2,500,000	8–3 K.S.	2¾	6	..	10 K.S.	6 K.S.	8 *14-in.*, 16 *6-in.*, 4 *12-pr.*, A.A.	8 (sub.)	27·5	4000 / 1000	1309 (as flag-ship)
b.	**Mutsu** . 1942	33,800	660	6	95	0	30	0	46,000 G.	Yokosuka	1920	1921	..	12 K.S.	..	..	..	..	..	8 *16-in.*, 20 *5·5-in.*, 4 *12-pr.* A.A.	8 (4 sub.)	23·0	5500 Coal & Oil	1304
b.	**Nagato** . 1941 *See p.* 368.									Kure .	1919	1920												1367 (as fleet flag-ship)
b.	**Yamashiro** * . 1938 *See p.* 370.	30,600	630	0	94	0	28	6	40,000 tur.	Yokosuka .	1915	1917	..	12 K.S.	3	8 K.S.	..	12 K.S.	6 K.S.	12 *14-in.*, 16 *6-in.*, 4 *12 pr.* A.A.	6 (sub.)	22·5	4000 / 1000	1272

The battleship Aso (*ex*-Bayan), 8100 tons, completed at La Seyne in 1903, is now classed as a mine-layer.

The armoured-cruisers Kasuga and Nisshin, 7630 tons, and the cruisers Asama, Adzuma, Idzumo, Iwate, and Yakumo, Tsushima, Chitase, Akashi were classified as coast-defence ships.

* These vessels, as funds permit, will be taken in hand for the installation of anti-submarine and anti-aircraft protection. It is also reported that they will be fitted to carry aeroplanes.

‡ Ex-battle-cruiser.

JAPAN.—Cruising Ships, &c.

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost	Armour. Side. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
A.C.	Wakamiya	5875	365	48¼	19	..	..	..	1901	..	..	..	2 *12-pr.*, 2 *3-pr.* A.A.	..	11	500	140
„	Notoro †	..	445	58	26½	3,750	Kawasaki	Bldg.	..	..	..	..	..	..	12	..	..
cr.	Ashigara	10,000	..	..	..	..	Kobe	..	..	..	..	..	..	..	..	.	..
„	Haguro						Nagasaki										
„	Myoko	10,000	..	..	..	..	Yokosuka	Bldg.	..	..	..	..	10 or 12 *8-in.*	..	..	..	..
„	Nachi						Kure										
l.cr.	Aoba	7100	580	50¾	..	100,000	Nagasaki	1925	1926	..	..	..	6 *8-in.*, 3 *12-pr.* A.A.	12	33	..	..
„	Furutaka						Uraga		1926								
„	Kako						Kawasaki										
„	Kinugasa *See p.* 385.						Kawasaki										
„	Chikuma	4950	440	46½	16¾	22,500 Cur. t. My.	Sasebo	1911	1912	..	2½	..	8 *6-in.*, 4 *3-in.*, 4 M.	3	26	500 / 1000	413
„	Hirado	4950	440	46½	16¾	22,500 P. tur. My.	Kobe	1911	1912	..	2½	..	8 *6-in.*, 4 *3-in.*, 4 M.	3	26	500 / 1000	390
A.C.	Hosho	9500	510	62	20¼	30,000 (G.)	Tsurumi (Asano)	1921	1922	..	..	..	4 *5·5-in.*, 2 *12-pr.* A.A.	..	25	..	..
l.cr.	Abukama	5570	500	46¾	15¾	90,000	Uraga	1922	1925	..	2 / —	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33·0	..	450
„	Isudzu						Uraga	1921	1923								
„	Jintsu						Kawasaki	1923	1924								
„	Kinu						Kawasaki	1921	1922								
„	Naka *See p.* 374.						Yokohama	1925	..								
„	Kiso *See p.* 374.	5500	500	46¾	15¾	90,000 (G.)	Nagasaki	1919	1921	..	2 / —	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33·0	..	439
„	Kitakami *See p.* 374.						Sasebo	1920	1921								
„	Kuma *See p.* 374.						Sasebo	1919	1920								
p.v.	Mogami	1350	300	31½	9¾	8000 turbines	Nagasaki	1908	1909	..	..	..	2 *4·7-in.*, 4 *12-pr.*	2	23·0	95 / 350	167

† Being converted from an oiler.

l. cr.	**Nagara**	5570	500	46¾	15¾	90,000 (G.)	Sasebo	1921	1922	..	2 / —	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33·0	..	439
„	**Natori** *See p.* 374.						Nagasaki (Mitsubishi)	1922	1922								
„	**Oh-I** *See p.* 374.	5500	500	46¾	15¾	90,000 (G.)	Kobe	1920	1921	..	2	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33·0	..	439
„	**Sendai** *See p.* 374.	5570	500	46¾	15¾	90,000	Nagasaki (Mitsubishi)	1923	1924	..	2 / —	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33·0	..	450
„	**Tama** *See p.* 374.	5500	500	46¾	15¾	90,000 (G.)	Nagasaki (Mitsubishi)	1920	1921	..	2	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33	..	439
„	**Tatsuta**	3500	440	41	13	51,000 (G.)	Sasebo	1918	1919	..	..	..	4 *5·5-in.*, 1 *12-pr.* H.A., 2 M.	6	33	..	322
„	**Tenryu** *See p.* 374.						Yokosuka										
„	**Tone**	4100	400	47	16¾	15,000 My	Sasebo	1907	1909	..	2½	..	2 *6-in.*, 10 *4·7-in.*, 2 *12-pr.*, 2 l.	3	23·0	300 / 900	401
l. cr.	**Yahagi**	4950	440	46½	16¾	22,500 P. tur. My.	Nagasaki	1911	1912	..	2½	..	8 *6-in.*, 4 *3-in.*, 4 M.	3	26	500 / 1000	413
p.v.	**Yodo**	1250	280	32	9¾	6500	Kobe	1907	1908	..	..	..	2 *4·7-in.*, 4 *12-pr.*	2	22·0	125 / 340	166
l. cr.	**Yubari** *See p.* 373.	3100	485	39½	11¾	55,000 (Estimated.)	Sasebo	1923	1923	..	..	..	6 *5·5-in.*, 1 *12-pr.* A.A., 2 M.	4	33	..	328
l. cr.	**Yura** *See p.* 374.	5570	500	46¾	15¾	90,000 (G.)	Sasebo	1922	1923	..	2	..	7 *5·5-in.*, 3 *12-pr.* A.A., 2 M.	8	33	..	450

Four additional 10,000-ton cruisers are projected.

Submarine depôt ships Chogei, Jingei, 8,500 tons, Komahashi, 1,230 tons.

Colliers: Noshima, Maroto. Oil ships: 15,400 tons, Erimo, Shiretoko, Sunosaki, Tsurugisaki, 1,970 tons, Ondo, Iro, Tsurumi, Sata, Shiriya, Hayatoma, Kamai, 19,550 tons, Noma, 11,400 tons.

Gunboats Saga, 780 tons, Uji, 620 tons.

River gunboats Toba, 250 tons; Fushimi, 180 tons; Sumida, 126 tons; Ataka, 850 tons, two 4·7-in. guns, and 2 M.; also Katata, Hira, Hodzu, and Seta, 340 tons, completed 1923. Two 55-ft. C.M.B.'s with two 18-in. torpedoes and one building. About 20 auxiliaries.

NETHERLANDS.

Class.	NAME	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Armament. Guns.	Torpedo Tubes.	Speed.	Coal.	Complement.
		tons	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots	tons.	
a.g.b.	**Brinio** . . .																				
"	**Friso** . . .	540	171	28	9¼	1200	Amsterdam .	1912 1913	1915	..	2 K.S.	¾	..	..	..	..	4 *4·1-in.* semi-automatic, 2 M.	..	14·5	34 Oil	52
"	**Gruno** . . .																				
c.d.s.	**Hertog Hendrik** . *See p.* 375.	5000	316¾	50	19	6282 *t.*	Amsterdam .	1902	1903	347,500	6 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	2 *9·4-in.*, 6 *5·9-in.*, 4 *2·9-in.*, 4 *1·4-in.*, 2 M.	3	14·5	830	347
"	**Jacob van Heemskerck**	4921	316¾	50	19	6396 *t.*	Amsterdam .	1906	1908	347,500	6–4 H.N.S.	2	..	..	10 H.N.S	6 H.N.S.	2 *9·4-in.*, 6 *5·9-in.*, 6 *2·9-in.*, 4 *1·4-in.*, 2 l.	2 1 sub.	14·5	610	351
l. cr.	**Java** . . .	7000	509½	52½	18	65,000	Flushing .	1921	1925	..	3	..	..	..	..	..	10 5·9-*in.*, 4 13-*pr.* A.A., 4 M.	—	30	1050 Oil	—
"	**Sumatra** . . .						Amsterdam	1920	1926												
"	**Marten Tromp** . *See p.* 375.	5216	330	50	18¾	6405 *t*	Amsterdam .	1904	1906	347,500	6–4 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 8 *2·9-in.*, 4 *1·4-in.*, 2 M.	3 2 sub.	14·5 *t*	830	349
"	**De Zeven Provincien**	6426	339½	56	20¼	8516 Y	Amsterdam .	1909	1910	..	6–4 K.S	2	..	..	10 K.S.	4 K.S.	2 *11-in.*, 4 *5·9-in.*, 10 *2·9-in.* semi-auto., 2 M.	..	15·3	1030	409

The Java and Sumatra are assigned to the Fleet of the Dutch East Indies. Light cruiser: Gelderland (1900), 4030 tons, now used as gunnery school. Five gunboats for the defence of the Zuyderzee. There are modern mine-layers, Medusa, Hydra, Van Meerlant and Douwe Aukes, 750 tons, three 2·9-in. semi-auto., completed 1922; two others, Havik and Vulcanus, and six old vessels converted to the same use. Four mine-sweepers (I.–IV.), 275–300 tons, 1 machine-gun. The gunboat Soemba and two old gunboats are in commission in the East Indies, and the gunboat Flores is building for the Indian Marine, and there are six mine-layers, Krakatau, Propatria, Assahan, Serdang, Siboga, and Hercules, and one mine-layer building. Surveying vessels Eilerts de Haan and Hydrograaf, and surveying vessels in the East Indies, Van Gogh, Van Doorn, Tydeman. Depôt ship for submarines (Polikaan), 2487 tons, four 2·9-in. semi-auto., 3 M., 1400 H.P. (electic drive), speed 12 knots, completed August, 1922 (East Indies).

NORWAY.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			in.	in.			knots.	tons.	
c.d.s.	Eidsvold . / Norge . (See p. 375.)	4233	290	$50\frac{1}{2}$	$16\frac{1}{2}$	4500 Y.	Elswick	1900	1901	350,000	6 H.N.S.	2	..	..	6 H.N.S.	6 H.N.S.	2 *8·2-in.* 6 *6-in.*, 8 *12-pr.*, 6 *3-pr.*	2 sub.	16·9 *t*	400 / 600	270
" / "	Harald Haarfagre . / Tordenskjold	3920	280	$48\frac{1}{2}$	$16\frac{1}{2}$	3700	Elswick	1896 / 1897	1898 / 1899	300,000	7 H.S.	2	..	..	8 H.S.	..	2 *8-in.*, 6 *4·7-in.*, 6 *12-pr.*, 6 *1½-pr.*	2 sub.	17·2 *t*	200 / 500	249

Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
g.b.	Ægir . . .	387	$108\frac{1}{2}$	$29\frac{1}{2}$	8	450	Horten .	1892	1893	..	$1\frac{1}{2}$	..	1 *8·2-in.*, 1 *2·7-in.*, 2 *1·9-in.* . . .	..	9·0	..	43
g.b.	Frithjof . . (laid up)	1349	$216\frac{1}{2}$	$32\frac{3}{4}$	$13\frac{1}{4}$	2800	Horten .	1896	1898	..	..	..	2 *4·7-in.*, 6 *12-pr.*, 4 *1·4-in.*, 2 l. . .	3 sub.	15·0	120	166

Mine-layers Fröya (1916), 760 tons, 22 knots, 100 mines; Glommen and Laugen (1916), 350 tons, 10 knots, 50 mines; seven old gunboats refitted as minelayers, 280 tons. Submarine depôt and repair ships Sarpen, refitted 1918, 1920 tons; Ellida, 1000 tons. Two oil transports.

RUSSIA—Armoured Ships.

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. Oil.	Complement.
		tons.	ft.	ft.	ft.							in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Pariskaia Kommuna	23,000	594	87	27½	42,000	Baltic Works	Baltic Works	1911	1915	..	9–5	3	..	..	12–10	6	12 *12-in.*, 16 *4·7 in.*, 2 *9-pr.* A.A., 1 *3-pr.*	4	23	3000	—
b.	Gangut	23,000	594	87	27½	42,000			1911	1914												
b.	Marat																					
b.	Poltava																					
b.	General Alexieff	22,600	510	89	27	26,500	..	..	1914	1917	..	12–4	3–1½	9–3	..	12–8	5	12 *12-in.*, 18 *5-in.*, 16 smaller, light and M.	4	21	1200/720	—
b.	Demokratiya†	..	..	..	..	27,300	..	..	Bldg.		..	..	..	..	..	..	..	12 *12-in.*, 20 *5·1-in.*, 12 smaller	4	..	..	—

† Building stopped. Not likely to be completed.

Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
	Admiral Butakov†	6800	507¾	50⅓	18⅓	50,000	Reval (towed to Petrograd)	Bldg.	..	..	3/1	3	15 *5·1-in.*, 4 *4-in.* A.A., 4 *3-in.*, 4 M. Can carry mines.	2	29½	1170 Coal & oil	..
	Admiral Grieg							Bldg.	..								
	Admiral Spiraidov							Bldg.	..								
	Aurora	6730	..	..	..	11,600	..	..	1908	..	..	..	14 *6-in.*, 7 smaller	..	20	..	..
	Almaz*	3300	363	43½	17½	7,500	..	1903	1905	..	—/3	..	7 *4·7-in.*, 2 smaller	..	19	650 coal	..
	Chevonaya-Ukrainia	7600	507	49½	18½	55,000	..	1915	1923	..	..	..	15 *5·1-in.*, 4 *9-pr.* A.A., 4 smaller. Fitted to carry 100 mines	2	29½	..	..
	General Kornilov* Komintern	6675	436	54	20½	19,500	..	..	1907	..	..	..	16 *6-in.*, 22 smaller	2	23	..	..
	Lazarev†	7600	507	49½	18½	55,000	..	Bldg.	..	..	3/1	3	15 *5·1-in.*, 4 *4-in.* A.A., 4 *3-in.*, 4 M. Fitted to carry 100 mines	2	29½	..	..
	Profintern	15190	..	.	..	19,700	..	..	1908	..	..	..	4 *10-in.*, 8 *8-in.*, 20 *4-in.*, 5 smaller	2	21	..	..
	Sovarnarkom	6800	507¾	50⅓	18⅓	50,000	..	1915	1924	..	3/1	3	15 *5·1-in.*, 4 *4-in.* A.A., 4 *3-in.*, 4 M. Fitted to carry mines	2	29½	..	..

* Reported to be partially ...

SPAIN.—Armoured Ships.

Name.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Secondary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
	tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
Alfonso XIII. *See p. 376.*	15,500	435	78¾	25½	15,500 Y. P. tur.	Ferrol	1913	1916	..	9–4 K.S.	2–1	6–5 K.S.	6–3 K.S.	10 K.S.	3 K.	8 *12-in.*, 20 *4-in.*, 2 *3-pr.*, 2 l., 2 M.	..	19·5	1850	735
Cataluña	7405	347½	61	23½	10,580	Cartagena	1900	1908	600,000	12–10	2	..	12	10½	..	2 *9·4-in.*, 8 *5·5-in.*, 8 *6-pr.*, 2 l., 10 *1-pr.*	..	18 *t*	1178	546
Emperador Carlos V. *See p. 376.*	9900	404	67	27½	15,000	Cadiz (Vea Murguia)	1895	1898	734,000	2	6½–2	2	..	10	2	2 *11-in.* (Hontoria), 8 *5·5-in.*, 4 *4·1-in.*, 10 *6-pr.*, 8 *1-pr.*, 2 M., 2 l.	2	19·0	2008	583
Jaime I. *See p. 376.*	15,700	435	78¾	25½	15,500 Y. P. tur.	Ferrol	1914	1915	..	9–4 K.S.	2–1	6–5 K.S.	6–3 K.S.	10 K.S.	3 K.	8 *12-in.*, 20 *4-in.*, 2 *12-pr.*, 2 *3-pr.*, 2 M.	..	20·2 *t*	1850	854
Princesa de Asturias	7427	347½	61	23¾	11,791	Cadiz	1896	1902	600,000	12–10	2	..	12	10½	..	2 *9·4-in.*, 8 *5·5-in.*, 8 *6-pr.*, 2 l., 10 *1-pr.*	..	18·0	1007	546

SPAIN.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Side. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	ins.				knots.	tons.	
l. cr.	Almirante Cervera (*See p.* 377.)	7850	545	54½	16½	80,000	Ferrol	Bld.	—	..	3 / —	..	8 *6-in.*, 4 *4-in.* A.A., 2 *3-pr.*	12	33·0	oil 1680	560
g.b.	Bonifaz	787	213	30	9½	1100 Y	Cartagena	.911	1912	..	..	..	4 *14-pr.*, 2 M.	..	14·0	148	121
to.g.b.	Don Alvaro de Bazán	810	236	27	11¼	3577	Ferrol	897	1899	..	..	..	{6 *6-pr.* / 8 *6-pr.*} 2 *2½-pr.*, 2 M.	..	19·0	168	121
g.b.	Doña María de Molina	810	236	27	11¼	3500	Ferrol	1896	1898								
„	Eduardo Dato	1335	253½†	83½	11¼	1700	Ferrol	1923	1925	..	..	..	4 *4-in.*	..	15	324	181
„	Jose Canalejas						Ferrol	1922	1924								
„	Antonio Canovas del Castillo							1922	1923								
l. cr.	Extremadura	2100	288	36	16¼	7000 T	Cadiz	1900	1902	..	— / 2	..	8 *4-in.* (Vickers), 4 *6-pr.*, 4 *1-pr.*	..	19·0	425	266
g.b.	Lauria	787	213	30	9½	1100 Y	Cartagena	1911	1912	..	..	..	4 *3-in.*, 2 M.	..	14·0	..	121
„	Laya								1911								
g.b.	Marqués de la Victoria	810	233	26¾	11	2711	Ferrol	1897	1900	..	..	..	8 *6-pr.*, 2 M.	..	19·0	..	121
l. cr.	Principe Alfonso (*See p.* 377.)	7850	545	54½	16½	80,000	Ferrol	1925	Bld.	..	3 / —	..	8 *6-in.*, 4 *4-in.* A.A., 2 *3-pr.*	12	33·0	oil	560
g.b.	Recalde	787	213	30	9½	1100 Y	Cartagena	1911	1911	..	..	..	4 *3-in.*, 2 M.	..	18·8	..	121
l. cr.	Reina Regente	5778	363	52½	16¼	11,000 W.T.	Ferrol	1906	1910	..	..	3	10 *5·9-in.*, 12 *2·2-in.*, 2 l., 8 *1-pr.*	..	19·5	1178	452
„	Reina Victoria Eugenia (*See p.* 378.)	5700	462†	50	15¾	25,000 P.T.	Ferrol	1920	1922	..	3–1½ / —	..	9 *6-in.*, 4 *3-pr.* A.A., 1 *12-pr.*, 4 M., 1 l.	4 (sub.)	25·5	650 coal & oil	420
„	Don Blas Lezo	4700	439	46	14½	45,000	Ferrol	1923	1924	..	..	..	6 *6-in.*, 4 *3-pr.* A.A., 4 M.	12	29·0	..	343
	Mendez Nuñez (*See p.* 378.)							1923	1924						29·05†		

Aircraft carrier Dédalo 10,800 tons, converted 1922, can carry 2 small dirigibles, 2 balloons, and 25 planes.
Infanta Isabel, 436 tons, Vasco Nuñez de Balboa, 295 tons, gun-boats.

Light cruiser Rio de la Plata, 1920 tons, converted to a mine-layer. Light gunboats Perla and Cartagenera, and motor-launches, M. 1–6, 40 tons (1919). Boys' training ship Galatea (*ex*-Clamatella), 2500 tons, recently bought in Italy. Several mine-trawlers and auxiliaries. Submarine salvage vessel Canguru, 2100 tons (1916).

One cruiser is building, Principe Alfonso Class, and three 10,000-ton cruisers authorised to be built at Ferrol. These are authorised in a new 10½-year building programme.

† Extreme.

SWEDEN.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour: Belt.	Armour: Deck.	Armour: Side above Belt.	Armour: Bulkhead.	Armour: Gun Position: Heavy Guns.	Armour: Gun Position: Secondary.	Armament: Guns.	Armament: Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c.d.b.	**Aeran** . .	3650	287	49¼	16·7	6500 Y.	Gothenburg	1901	1902	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 1 *1·4-in.*	2 sub.	17·2 t	300	300
„	**Dristigheten** .	3620	285	48·5	17	5400 Y.	Gothenburg	1900	1901	..	8 K.S.	1⅞	..	..	8 N.S.	3¾ K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 1 *1·4-in.*	2 sub.	16·5	310	250
„	**Drottning-Victoria** See p. 379.	7605	396·7	61	21½	22,000 tur. Y.	Gothenburg	1917	1921	666,000	8–6 K.S.	1½	4 H.S.	..	8 K.S.	5 K.S.	4 *11-in.*, 8 *6-in.*, 6 *12-pr.*, 2 *2·2-in.*, 2 M.	2 sub.	22·0 t	350 800	450
a.c.	**Fylgia** . .	4980	377·6	48·5	20·6	12,440 Y. t	Stockholm .	1905	1907	385,700	4 K.S.	2	..	..	5 K.S.	5 K.S.	8 *5·9-in.*, 14 *2·2-in.*, 2 *1·4-in.* .	2 sub.	22·5 t	350 900	341
c.d.b.	**Gustav V.** . See p. 379.	7605	396·7	61	21½	22,000 tur. Y.	Malmö . .	1917	1922	666,000	8–6 K.S.	1½	4 H.S.	..	8 K.S.	5 K.S.	4 *11-in.*, 8 *6-in.*, 6 *12-pr.*, 2 *2·2-in.*, 2 M.	2 sub.	22·0	350 800	450
„	**Manligheten** .	3840	287	49¼	17·4	7400 Y.	Malmö .	1903	1904	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 8 *2·2-in.*, 1 *1·4-in.*	2 sub.	17·0	400	300
„	**Oscar II** . . See p. 379.	4658	313·6	50·5	18	9000 Y.	Gothenburg	1905	1907	..	6 K.S.	2	6 K.S.	6 K.S.	7½ K.S.	5 K.S.	2 *8·2-in.*, 8 *6-in.*, 10 *2·2-in.*, 4 *1·4-in.*	2 sub.	18·0	350 500	339
„	**Sverige** . . See p. 379.	7605	396·7	61	21½	20,000 tur. Y.	Gothenburg	1914	1917	666,000	8–6 K.S.	1½	4 K.S.	..	8 K.S.	5 K.S.	4 *11-in.*, 8 *6-in.*, 6 *12-pr.*, 2 *2·2-in.*, 2 M.	2 sub.	22·0	350 800	450
„	**Tapperheten** .	3990	287	49¼	17·7	6000 Y.	Malmö .	1901	1903	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 1 *1·4-in.*	2 sub.	16·5	330	300
„	**Wasa** . .	3745	287	49¼	17	6000 Y.	Stockholm .	1901	1902	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 1 *1·4-in.*	2 sub.	16·5	330	300

All the ships are now rated as coast-defence battleships, with the exception of the Fylgia. Older coast-defence ships Oden, Thor, Niord (1897, 1899, 1899), 3715 tons, 2 9·8-in., 6 4·7-in. guns. Mine cruisers Clas Fleming, 1800 tons, 4 4·7 in., 20 knots, Edda; mine-sweepers Sökaren, Sveparen, Sprängeren, and others. Torpedo gunboats Jacob Bagge, Oernen, Psilander, 830 tons, 2 4·7-in., 4 2·2-in., 20 knots. Two gunboats, 512–589 tons. Depôt ships for submarines, Svea, 3300 tons, Blenda, 460 tons.

UNITED STATES.—Armoured Ships.

Class.	NAME / DATE FOR SCRAPPING.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. §	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Secondary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Albany**	3430	354	43¾	19	7500	Armstrong	1899	1900	..	..	..	..	..	..	..	8 *5-in.*, 2 *3-pr.*, 1 *14-pr.* A.A.	..	20 0	782 / —	326
b.	**Arizona** 1937 *See p.* 383.	31,400	596	97	28¾ †	34,000 B. & W. P. tur. (G.)	New York (Navy Yard)	1915	1916	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (45 cal.), 14 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 (sub.)	21·0	2300 Oil	1400
b.	**Arkansas** 1935 *See p.* 386.	26,000	554	93¼	28½ †	28,533 P. tur.	Camden, N.J. (N.Y.S.B.Co.)	1911	1912	964,000	11–5 K.S.	3	..	8–6 K.S.	11 K.S	6½	12 *12-in.*, 16 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 (sub.)	20·5 *t*	2700 / 400	1490
b.	**California** 1941 *See p.* 381.	32,300	600	97½	30¼	28,500 Tur. (G.)	Mare Island (Navy Yard)	1919	1921	..	14 K.S.	..	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.*, 8 *14-pr.* A.A., 4 *6-pr.*	2 (sub.)	21·0	3500 Oil	1407
a.c.	**Charleston**	9700	424	66	35 †	27,500 B.&W.	Newport News	1904	1906	563,030	4 H.S	3	4 H.S.	..	4 H.S.	..	12 *6-in.*, 4 *3-in.*, 2 *3-in.* A.A., 10 M., 2 l.	..	22·0	1800 / Coal.	784
a.c.	**Charlotte** (*ex* North Carolina)	14,500	502	72¾	25 †	29,785 B. & W.	Newport News	1906	1908	970,630‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 12 *3-in.*, 2 *3-in.* A.A., 4 *6-pr.*, 15 M. & l.	4 sub.	21·9 *t*	2000 / Coal.	964
b.	**Colorado.** 1942 *See p.* 380.	32,600	600	97½	30½ †	28,900 B. & W. tur.	N.Y.S.B. Co.	1921	1923	1,383,000	13½–12 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.*, 8 *3-in.* A.A., 4 *6-pr.*	2 (sub.)	21·0	2914 Oil	1407

§ The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates.
† Mean draught.
‡ Including armour, but not armament.

b.	**Florida**‡ . . 1934 *See p.* 387.	21,825	510	88¼	28½ †	27,036 B. & W. P. tur.	New York . (Navy Yard)	1910	1911	1,280,000	11	..	10	..	11	5	10 *12-in.*, 16 *5-in.*, 8 *3-in.* A.A., 6 *3-pr.*	2 (sub.)	20·75 ‡	2560 / 400	1014
a.c.	**Frederick** . (*ex* Maryland)	13,680	502	69½	24½	28,059 B. & W.	Newport News	1903	1905	756,400	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 2 *3-in.* A.A., 14 l.	2 (sub.)	22·4 ‡	2100 Coal.	898
a.c.	**Huntington** . (*ex* West Virginia)	13,680	502	69½	24½	31,437 B. & W.	Newport	1903	1905	798,310	6–3½ K.S.	4	5 K.S.	12 H.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 2 *3-in.* A.A., 8 *1 pr.*, 4 M., 1 l.	2 (sub.)	22·1 ‡	2100 Coal.	898
a.c.	**Huron** . . (*ex* South Dakota)	13,680	502	69½	26	28,598 B. & W.	S. Francisco.	1904	1907	770,570	14 K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 2 *3-in.* A.A., 7 *1-pr.*, 1 l.	2 sub.	22·0 ‡	2200 Coal.	899
b.	**Idaho** . . 1939 *See p.* 382	32,000	600	97½	30 †	32,000 B. & W. P. tur. (G.)	Camden, N.J. (N.Y.S.B. Co.)	1917	1919	1,485,000	6–3½ K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.*, 8 *14-pr.* A.A., 4 *3-pr.*	2 (sub.)	21·0	2914 Oil	1440
A.C.	**Lexington** .	33,000 approx.	874 *	104	30 †	180,000 tur.electric	Quincy, Mass.	..	..	..	..	..	..	..	..	..	8 *8-in.*, 12 *5-in.* A.A. Stowage for 72 aircraft. Fitted with a catapult.	6	34	Oil	..
b.	**Maryland** . 1941 *See p.* 380.	32,600	600	97¼	30½ †	28,900 T.	Newport News	1920	1921	1,383,000	13½–12 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.*, 8 *3-in.* A.A., 4 *6-pr.*	2 (sub.)	21·0	2914 Oil	1407
b.	**Mississippi** . 1938 *See p.* 382.	32,000	600	97⅜	30 †	32,000 B. & W. Cur. t. (G.)	Newport News	1917	1917	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.*, 8 *14-pr.* A.A., 4 *6-pr.*	2 sub.	21·0	2914 Oil	1440

* Extreme. † Mean draught. ‡ Installation of anti-submarine and anti-aircraft protection and conversion to oil burning authorised.

UNITED STATES.—Armoured Ships—*continued*.

Class.	NAME. Date for Scrapping.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. §	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons	
a.c.	**Missoula** . (*ex* Montana)	14,500	502	72⅞	27 †	27,958 B. & W.	Newport News	1906	1908	970,630‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.* 2 *8-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 10 *1-pr.*, 4 M., 1 l.	4 sub.	22·2 *t*	2000 Coal	964
a.c	**New Orleans** .	3430	354	43¾	19	7500	Armstrong .	1896	1898	..	..	.	..	..	..	..	8 *5-in.*, 2 *3-pr.*, 1 *14-pr.* A.A.	..	20·0	693 —	312
b.	**Nevada** . . 1936 *See p.* 384.	27,500	575	95¼	28½ †	23,312 Y. Cur. tur.	Quincy, Mass. (Fore River)	1914	1916	1,211,342	13½–8 K.S	1½–3	.. K.S.	13½ K.S.	18–16 K.S.	..	10 *14-in.* (45 cal.), 12 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 sub.	20·5	2000 Oil	1360
b.	**New Mexico** . 1939 *See p.* 382.	32,000	600	97¾	30 †	27,500 B. & W. Electric drive	New York . (Navy Yard)	1917	1918	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.*, 8 *14-pr.* A.A., 4 *6-pr.*	2 (sub.)	21·0	2914 Oil	1440
	New York * . 1935 *See p.* 385.	27,000	565	95¼	28½ †	29,687 B. & W.	New York . (Navy Yard)	1912	1914	1,315,114	12–4 K.S	3	9 K.S.	10 K.S.	14–8 K.S.	6 K.S.	10 *14-in.* (45 cal.), 16 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	4 sub.	21·0	2918 400	1500
a.c.	**Olympia** .	5865	344	53¼	25	13,500	Union Iron Works, 'Frisco	1892	1894	..	..	..	..	..	..	..	10 *5-in.*, 4 *6-pr.*, 2 *14-pr.* A.A.	..	21·0	1169 —	382
b.	**Oklahoma** . 1936 *See p.* 384.	27,500	575	95¼	29¾ †	21,703 B. & W.	New York .	1914	1916	2,200,000	13½–8 K.S.	1½–3	K.S.	13½ K.S.	18–16 K.S.	..	10 *14-in.* (45 cal.), 12 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 sub.	20·5	2000 Oil	1360
b.	**Pennsylvania** . 1937 *See p.* 383.	31,400	596	97	29¾ †	31,500 B. & W. Cur. tur.	Newport News	1915	1916	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (45 cal.), 14 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 sub.	21·0	2300 Oil	1002
a.c.	**Pittsburg** .	13,680	502	69½	26	28,600 Nic.	Philadelphia (Cramp)	1903	1905	799,840	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 18 *1-pr.*, 8 M., 1 l.	2 sub.	22·4 *t*	2100 Coal	898
a. c.	**Pueblo** . . (*ex* Colorado)	13,680	502	69½	24½	26,837 Nic.	Philadelphia	1903	1905	756,000	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 12 *1-pr.*, 4 M., 1 l.	2 (sub.)	22·2 *t*	2100 Coal	898

a.c.	**Rochester** .	8150	384	65	26⅓	16,600	Philadelphia (Cramp)	1891	1893	..	..	..	..	..	..	..	4 *8-in*, 8 *5-in.*, 2 *14-pr.* A.A., 2 *3-pr.*	..	21·0	1100 / —	662
a.c.	**St. Louis** .	9700	424	66	22½ †	27,264 B. & W.	Philadelphia (Cramp)	1905	1906	563,030	4 K.S.	3	4–3	..	4 K.S.	..	12 *6-in.*, 4 *3-in.*, 2 *3-in.* A.A., 2 *3-pr.*, 12 l. & M.	..	22·1 *t*	1800 Coal	784
A.C.	**Saratoga** .	33,000 approx.	874	104	30 †	180,000 tur.electric	N.Y. Ship-building Co.	1925	..	..	..	..	..	..	..	..	8 *8-in.*, 12 *5-in.* A.A., stowage for 72 aircraft. Fitted with a catapult	..	..	..	..
a.c.	**Seattle** . (*ex* Washington)	14,500	502	72¾	27	27,152 B. & W.	Camden, N.J.	1905	1906	970,630‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 12 *3-in.*, 2 *3-in.* A.A., 4 *6-pr.*, 4 M., 11 l.	4 sub.	22·3 *t*	2000 Coal	964
b.	**Tennessee** . 1940 *See p.* 381.	32,300	600	97¼	30¼ †	28,500 T.	New York Navy yard	1919	1920	..	14 K.S.	..	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.*, 8 *14-pr.* A.A., 4 *6-pr.*	2 sub.	21·0	2500 Oil	1407
b.	**Texas** * . 1935 *See p.* 385.	27,000	565	95¼	28½ †	28,100 B. & W. *t*	Newport News	1912	1914	1,166,000	12–4 K.S.	3	9 K.S.	10 K.S.	14–8 K.S.	6 K.S.	10 *14-in.* (45 cal.), 16 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	4 sub.	21·0 *t*	2918 / 400	1500
b.	**Utah** * . 1934 *See p.* 387.	21,825	510	88¼	28½	28,477 B. & W *t.* P. tur	Camden, N.J	1909	1911	813,500	11	..	10	..	11	5	10 *12-in.*, 16 *5-in.*, 8 *3-in.* A.A., 4 *3-pr.*	2 sub.	20·75 *t*	2560 / 400	1014
b.	**West Virginia** 1942 *See p.* 380.	32,600	600	97¼	30½ †	28,900 T.	Newport News	1921	1923	1,383,000	13½–12 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.*, 8 *3-in.* A.A., 4 *6-pr.*	2 sub.	21·0	2841 Oil	1407
b.	**Wyoming** * . 1934 *See p.* 386.	26,000	554	93¼	29¾ †	31,437 B. & W. P. tur.	Philadelphia	1911	1912	963,800	11–9 K.S.	..	..	8–6 K.S.	11 K.S.	8	12 *12-in.*, 16 *5-in.*, 8 *3-in.* A.A., 6 *3-pr.*	2 sub.	20·5 *t*	2750 / 400	1490

* Installation of anti-submarine and anti-aircraft protection and conversion to oil burning authorised.

§ See note on p. 374 — † Mean Draught. — ‡ Including armour, but not armament.

UNITED STATES.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. §	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.						in.	in.			knots.	tons.	
g.v.	**Asheville**	1575	225	41¼	11¼†	800 P. tur.	Charleston	1918	1919	£176,718	..	..	3 *4-in.*, 2 *3-pr.*	..	12	..	157
scout cr.	**Birmingham**	3750	420	47	18¾†	15,670 Express	Quincy, Mass.	1907	1908	301,000	2–1½	..	4 *5-in.*, 2 *3-in.*, 1 *3-in.* A.A., 4 M.	2 sub.	24·3 *t*	1433 Coal	356
p.v.	**Chattanooga**	3200	292	44	17	5303 B.& W.	Elizabeth Port	1903	1904	212,325	2	..	6 *5-in.*, 1 *3-in.* A.A., 4 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	16·65 *t*	740 Coal	302
scout cr.	**Chester**	3750	420	47	18¾†	16,000 Nor. turb.	Bath, Me.	1907	1908	337,000	2–1½	..	4 *5-in.*, 2 *3-in.*, 1 *3-in.* A.A., 4 M.	2 sub.	26·5 *t*	1433 Coal	356
" "	**Cincinnati** **Concord** *See p.* 388.	7500	550	55	19†	90,000	Tacoma, Wash. Philadelphia (Cramp)	1921	1924 1923	Cost and fee	2½ side	..	12 *6-in.*, 4 *3-in.* A.A., 2 *3-pr.*	2 twin and 2 triple above water 21-in.	33·7	2000 Oil.	450
p.v.	**Cleveland**	3200	292	44	17	4640 B.&W.	Bath, Me.	1901	1903	212,325	2	..	6 *5-in.*, 1 *3-in.* A.A., 2 *1-pr.*, 2 M., 1 l.	..	16·4 *t*	700 Coal	302
p.v. "	**Denver** **Des Moines**	3200	292	44	17	4135 B. & W.	Philadelphia Quincy, Mass.	1902	1904	212,325	2	..	6 *5-in.*, 1 *3-in.* A.A., 4 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·65	700 Coal	303
scout cr.	**Detroit** *See p.* 388.	7500	550	55	19†	90,000	Quincy, Mass. (Bethlehem)	1923	1923	Cost and fee.	2½ side	..	12 *6-in.*, 4 *3-in.* A.A., 2 *3-pr.*	2 twin and 2 triple above water 21-in.	33·7	2000 Oil.	450
p.v.	**Galveston**	3200	292	44	17	5073 B. & W.	Richmond, Va.	1903	1904	212,325	2	..	6 *5-in.*, 1 *3-in.* A.A., 4 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·4	700 Coal	302

A.c.	**Langley**	12,700	520	65	19	7160	..	..	1922	..	..	..	4 *5-in.*, 30 aeroplanes	..	14·5	..	..
scout cr.	**Marblehead**	7500	550	55	19†	90,000	Philadelphia (Cramp)	1923	1924	Cost and fee	2½ side	..	12 *6-in.*, 4 *3-in.* A.A.; 2 *3-pr.*	2 twin and 2 triple above water 21-in.	33·7	2000 Oil	450
"	**Memphis** *See p.* 388.								1925								
"	**Milwaukee** *See p.* 388.	7500	550	55	19†	90,000	Tacoma, Wash.	1921	1923								
scout cr.	**Omaha**	7500	550	55	19†	90,000	Tacoma, Wash.	1920	1923	Cost and fee	2½ side	..	12 *6-in.*, 4 *3-in.* A.A.; 2 *3-pr.*	2 twin and 2 triple above water 21-in.	33·7	2000 Oil	450
"	**Raleigh**						Quincy, Mass.	1922	1924								
"	**Richmond** *See p.* 388.						Philadelphia (Cramp)	1921	1923								
l.c.	**Salt Lake City**	10,000	570	65¼	19½	..	Philadelphia (Cramp)	Bldg.	..	..	..	..	8 *8-in.*	..	32½	..	..
"	**Pensacola**						New York (Navy Yard)										
p.v.	**Sacramento**	1425	225	40¾	11½	1022	Philadelphia	1913	1914	101,200	..	..	3 *4-in.*, 2 *3-pr.*, 2 M., 2 l.	..	12·8 *t*	428	156
scout cr.	**Salem**	3750	420	47	18¾	22,242 W.T. turb.	Quincy, Mass.	1907	1908	301,000	2–1½	..	4 *5-in.*, 2 *3-in.*, 1 *3-in.* A.A., 2 M.	2 sub.	25·9 *t*	1433 Coal	356
sc. cr.	**Trenton** *See p.* 388.	7500	550	55	19†	90,000	Philadelphia (Cramp)	1923	1924	Cost and fee	2½ side	..	12 *6-in.*, 4 *3-in.* A.A., 2 *3-pr.*	2 twin and 2 triple above water 21-in.	33·7	2000 Oil	450
g.r.	**Tulsu**	1575	225	41¼	11¼†	800	Charleston	1922	1923	..	..	..	3 *4 in.*, 2 *3-pr.*	..	12	..	157
A.T.	**Wright**	11,000	448	58	30	6000	..	..	1921	..	..	..	2 *5-in.*, 2 *3-in.* A.A.	..	15	1630 Oil	313

§ Prices exclusive of armament. † Mean draught.

Six cruisers of 10,000 tons displacement, mounting 8-in. guns, are authorised, and building will commence this year.

Patoka, airship tender. Patrolling and gun vessels, 10 in number, and 8 patrolling yachts. About fifty patrol vessels (Eagles) and submarine chasers. Fleet seaplane tender Aroostook and others adapted. Mine-laying vessels Baltimore, San Francisco, and Shawmut, carrying 5-in. and small anti-aircraft guns, and a number of light mine-layers ex-T.B.D.'s. A large number of mine-sweepers and tugs. Submarine tenders Holland, Beaver, Bushnell, Camden, Fulton, Rainbow, Savannah Argonne, and Canopus. Destroyer depôt ships Altair, Denebola, Rigel, Black Hawk, Buffalo, Bridgeport, Dobbin, Meville, and Whitney. Repair ships Medusa, 10,000 tons, Prometheus and Vestal, 12,595 tons. Supply ships Arctic, Bridge, Rappahanock. Hospital ships Comfort, Mercy, Relief, and Solace. Nineteen oilers and 4 ships for carrying oil and coal. River gunboats Monocacy and Palos, completed 1914, Pigeon and Penguin, completed 1919 and 1918. Two old ones, Villalobos and Pampanga. Six river gunboats building. Thirty-four submarine chasers, mounted with 1 3-in. gun.

SHIPS OF THE LESSER NAVIES.

Austria.—Patrol vessels: Neretva, Compo, Fogas and Pozsony.

Belgium.—The maritime affairs of Belgium are under the control of the Minister of National Defence, who is responsible for the administration of the defences by land, sea, and air. The nucleus of the Navy consists of the sloop *ex* Zinnia 16 knots, one 4·7-in. and two 12-prs., for fishery protection duties, and 9 ex-German torpedo boats.

Bulgaria.—Under the terms of the naval clauses of the Peace Treaty, Bulgarian warships of all classes, existing or under construction, were surrendered to the Allied and Associated Powers or broken up. All vessels are under the Ministry of Commerce for police and preventive duties; torpedo boats Derzki, Khrabri, Smelyi, and Strogi, with some motor boats of little value.

China.—Cruisers: Chao Ho (Elswick, 1912, 2,600 tons), Ying Jui (Barrow, 1912, 2750 tons)—two 6-in., two 4-in., ten smaller; Hai Yung, Hai Chou, and Hai Chen (Germany, 1897–1898, 2,950 tons)—three 5·9 in., eight 4-in. and smaller; Hai Chi (Armstrong's, 1899, 4,300 tons)—two 8-in., ten 4·7 in. and smaller. Destroyers: Chien Kang, Tung An, and Yu Chang, of 390 tons, speed 30 knots, armament: two 12-pr., two 3-pr., and two 18-in. T.T. Torpedo boats: Seventeen. River gunboats: Twenty-two. Also several despatch vessels and torpedo gunboats. There are, in addition, a few gunboats and miscellaneous vessels belonging to the water-police of the Kwang Tung Province.

Colombia.—Gunboats, Chercinto, Bogota, Cauca, and four guardacostas. River gunboats, General Nerino and Esperanza, 400 tons. Three revenue cruisers building, 150 tons, 13 knots, two 3-pr.

Cuba.—Light cruiser, Cuba, 2055 tons, 6000 H.P. 18 knots, and the training ship Patria, 1220 tons, 16 knots; also 5 gunboats.

Czecho-Slovakia.—There are six patrol ships and two tugs on river service.

Ecuador.—The torpedo cruiser Libertador Bolivar, mine-laying torpedo boat Tarqui, and special vessel Cotopaxi.

Egypt.—Sloop (*ex* Syringa), 1918, 1310 tons, 17 knots, two 4-in. guns. Nile stern-wheel gunboats Sultan, Sheikh, and Melik, 140 tons, Zafir, Fateh and Naseh, 128 tons; also the Abu Klea, Hafir, Metemmeh, and Tamai.

Esthonia.—The Navy consists of destroyers Wambola (*ex* Kapitan Kingsbergen), 1600 tons, 30 knots, four 4-in. guns, 2 M., 9 T.T., and Lennuk (*ex* Avtroil), 1800 tons, 32 knots, five 4-in. guns, and one 12-pr., 9 T.T., with gunboats, launches and some other vessels, including the *ex* Russian gunboat Bobr, 875 tons, two 4·7-in. and four 12-pr. guns, completed in 1908, which has received the name of Lembit. Three mine-layers, seven mine-sweepers, one ice-breaker, and Peipus Lake gunboats Ahti and Tartu.

Finland.—Patrol boats Klas Horn (*ex* Posadnik), Uusimaa, Hämeenmaa, Matti Kurki (*ex* Voevoda), Karjala (*ex* Filin), and Turunmaa (*ex* Orlan); also 2 torpedo boats S1, S5; 3 C.M.B.'s; 6 ice-breakers, and several mine-sweepers and layers and motor launches. Following vessels are projected: 2 monitors, 4 torpedo boats (C.M.B.'S), 4 submarines, 1 submarine depôt ship.

Hayti.—Four special service vessels ranging from 270 tons to 1200 tons.

Hungary.—Patrol vessels: Debreczen, Kecskemet, Siofok, Szeged, and 4 others; also 12 motor launches.

Jugo-Slavia.—River monitors on the Danube: Drava (*ex* Enns), Morava (*ex* Körös), Sava (*ex* Bodrog), Varda (*ex* Bosnia). Two patrol vessels and 11 *ex* Austro-Hungarian torpedo boats (T. class), lightly armed, for police and preventive duties only; ten mine-sweepers, 35 seaplanes, and several transports.

Latvia.—Gunboat Virsaitis (*ex* German M68), 480 tons, two 3-in., two 6-pr., one 3-in. A.A., one torpedo tube; 1 ice-breaker; 2 submarines Ronis and Spidola, 390 tons surface displ., launched

1926, and 2 mine-sweepers, 255 tons, 14 knots; one of these, the Imanta, was recently launched.

Mexico.—Gun-vessels, Tampico and Vera Cruz (Elizabethport, New Jersey, 1902); displacement, 980 tons; armament, four 4-in. Q.F., six 6-pr.; 16 knots; fitted to serve as transports for 200 troops, Bravo 1200 tons; 2600 I.H.P.; 17 knots (Leghorn, 1904), and Aguas Prieta, 1200 tons; 1800 I.H.P.; 15 knots. Training ship Zaragoza, 1200 tons, 1300 H.P., 15 knots, four 4·7-in. and four small Q.F. Two revenue cutters. A small aircraft establishment. On the Pacific side, two gunboats and a transport.

Peru.—Almirante Grau and Coronel Bolognesi, cruisers, 3200 tons; (Barrow, 1906); two 6-in., eight 14-pdr., eight 1½-pdr.; 2 submerged torpedo tubes; 24 knots; also Lima (training.) Gunboat America. Destroyer, Rodriguez, 500 tons, and submarines, Ferré and Palacios, built Le Creusot, 1912–13. Three submarines, Arica, Tacna, and Tarapacá, have been built in Italy (Ansaldo). Five river launches, two vedettes, and a small seaplane establishment. Submarines R1 and R2 are building at New London, U.S.A., 800 tons, 14½ knots, launched 1926.

Poland.—The Polish Government hopes eventually to become possessed of a small Navy. She has been allotted five *ex* German torpedo boats for police purposes. Gunboats, Komendant Pilsudski, 500 tons, carrying several small guns, and General Haller, built in Finland. Training ship, Lwow. Monitors, Warszowa, Horodyszcre, Pinsk, Mozyrz, and some 15 minor vessels. Four river monitors are building at Krakow, 70 tons, one 4·1-in., two 12-pr., 3 maxim.

Portugal.—The cruiser Adamastor, 1760 tons, completed at Leghorn in 1897, two 4·7-in., four 4·1-in., four 3-pr., 3 maxim, 2 torpedo tubes (14-in.). Eleven gunboats mainly for Mozambique and Timor. The mine-layer Vulcano was built by Messrs. Thornycroft in 1909. There are other small boats, and several sloops sold out of the British Navy are being added. These are the Republica (*ex* Gladiolus), and Carvalho Araujo (*ex* Jonquil.) Portugal has the old destroyer Tejo and four modern, Douro, Tamega, Guadiana, and Vouga (1912–18), 700 tons, 11,000 H.P., 30 knots, two tubes, also four *ex* Austrian F boats for police duties. Submarines Espadarte, 245–300 tons, 13 knots (F.I.A.T.), and Foca, Golfinho, and Hidra (Laurenti); 260–389 tons, 13–8·5 knots, 2 T.T. Seaplane establish-

ments at Belem, Faro and Aviero. The gunboat Patria is at Lourenço Marques.

Roumania.—The Black Sea Force comprises the flotilla leaders Marasti and Maracesti, and the torpedo boats Vijelia, Sborul, Naluca, Zmeul, Vartejul, and Viforul, four *ex* French gunboats fitted as mine-layers, and five *ex* Italian motor launches. At Constanza and Sulina are the old protected cruiser Elizabeta, now a hulk, and some tugs ; and at Galatz the pilots' school, two river transports and some tugs. The Danube flotilla comprises the monitors Ioan Bratianu, Alexandru Lahovary, Lascar Catargiu, Mihail Kogalniceanu, Besarabia, Bucovina, and Ardeal (600 tons, three 4·7-in guns), seven vedettes, and the yacht Macinul. The torpedo boats are *ex* Austrian F and T classes and were assigned to Roumania for police duties. Two submarines are projected.

Santo Domingo.—The Independencia, built in England 1894, 322 tons, seven Hotchkiss Q.F. Four patrol vessels for revenue service.

Sarawak.—Gunboat Aline and steamboats Lorna Doone and Aden.

Siam.—The gunboats Ratnakosindr, 1925, 920 tons, two 6-in., four 3-in. H.A., 12 knots; Bali and Sugrib, Muratha and Mongkut, 500–700 tons, one 4·7-in. Q.F., five 2·2-in., four 1·4-in., 11–12 knots, launched 1898, 1901, 1898, and 1887 respectively. One despatch vessel, 195 tons. Two 380-ton, 27-knot destroyers, built at Kobe, Sua Gamron Sindhu and Sua Tayanchou. Phra Ruan (*ex* British destroyer Radiant, 1917), 4 torpedo boats. One coastal motor boat, 2 torpedo tubes (18-in.). There is no definite organization of the Siamese ships and vessels, which occasionally cruise from Bangkok.

Turkey.—The old battleship Torghad Reis (*ex* German Weissenburg, 1891). The battle-cruiser Yavouz Sultan Selim (*ex* Goeben), 24,000 tons, 25 knots. Armament : ten 11-in., ten 5·9-in. and smaller. Light cruisers : Hamidieh (Elswick, 1903), 3,830 tons, speed 22 knots, armament: two 5·9-in., and smaller ; Medjidieh (Philadelphia, 1903), 3,300 tons, speed 22 knots, armament: four 5·1-in. and smaller. Destroyers, two; torpedo boats, four; and several gunboats, mine-layers, and yachts. Three submarines are building and two more projected.

Tenders have been invited for 3–5 destroyers, 1300 tons, 36 knots, four 5-in., one 3-in., 40 mines; and for a number of mine-layers.

Uruguay.—Light cruiser Monte Video, torpedo-cruiser Uruguay, built at the Vulcan Yard, Stettin; 1400 tons; two 4·7-in., four 12-pdr., twelve Maxims; two 18-in. torpedo tubes. Torpedo boat Oriental, yacht 18 de Julio, and some special vessels.

Venezuela.—Marescal Sucre (*ex* Isla de Cuba), drill ship bought from United States, 1912. Gunboats, General Salom, Miranda (armed tug), José Felix Pribas (transport), Antonio Diaz.

BRITISH AND FOREIGN FLOTILLAS.

Great Britain.

Name or Number.	Built by.	Completed.	Dimensions. Length (extreme).	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
FLOTILLA LEADERS.													
			ft. ins.	ft. ins.	ft. ins.		Tons.		Knots.				Tons.
Abdiel	Cammell Laird	1916	325	31 9	10 9 mean, 12 0 max.	3	1610 to 1680	36,000	34	4 4-in. Q.F. 1 2-pr., 1 3-in. A.A. Abdiel 3 4-in. Minelayer.	4	130 to 140	Oil. 515
Grenville													
Seymour	" "	1916											
Saumarez													
Shakespeare	Thornycroft	1917	329	31 11	12 4	2	1750	40,000	36	5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A.	6	182	Oil. 500
Spenser	"	1917											
Wallace	"	1919											
Keppel	"	1925											
Broke, ex Rooke	"	1925											
Bruce			332 6	31 9	12 3	2	1800	40,000	36·5	5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A. Campbell has no 2-pr.	6	182	Oil. 500
Douglas													
Campbell													
Mackay, ex Claverhouse	Cammell Laird	1918											
		1919											
Malcolm		1919											
Montrose	Hawthorn	1918											
Stuart	"	1918											

DESTROYERS.

Name or Number.	Built by.	Completed.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Amazon (T)	Thornycroft	Bldg.	311¾	31½	9	..	1330	..	37	4 4·7 in., 2 2-pr.	..	..	..
Ambuscade (Y)	Yarrow	Bldg.	307	31	8¼	..	1210	..	37	4 4·7-in., 2 2-pr.	..	..	..
Admiralty "S" Class:													
Sabre	Stephen	1918	276	26¾	10⅝	2	1075	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	301
Shamrock	Doxford	1919											
Saladin	Stephen	1919											
Sardonyx	"	1919											
Tactician	Beardmore	1918	276	26¾	10⅝	2	1075	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	301
Tara	"	1918									2 D. 2 S.		
Scimitar	Brown	1918	276	26¾	10⅝	2	1075	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	301
Scythe	"	1918											
Seabear	"	1918											
Seafire	"	1918											
Searcher	"	1918											
Seawolf	"	1918											
Sepoy	Denny	1918											
Seraph	"	1918											
Serapis	"	1919											
Serene	"	1919											
Sesame	"	1919											
Sirdar	Fairfield	1918											
Somme	"	1918											
Steadfast	Palmer	1919											
Sterling	"	1919											
Spindrift	Fairfield	1919											
Turbulent	Haw. Leslie	1919											
Tenedos	"	1919											
Thanet	"	1919											
Thracian	"	1922											
Stormcloud	Palmer	1920											
Strenuous	Scott	1919											
Stronghold	"	1919											
Sturdy	"	1919											
Sportive	Swan Hunter	1918											
Sparrowhawk	" "	1918											
Splendid	" "	1918											
Simoom	Brown	1918											
Swallow	Scott	1918											
Tilbury	Swan Hunter	1918											
Tintagel	" "	1918											

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Admiralty													
"S" Class—contd.													
Tomahawk (*Y*)	Yarrow	1918											
Tumult (*Y*)	„	1918											
Turquoise (*Y*)	„	1919	273½	25¾	9⅝	2	930	23,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	256
Tuscan (*Y*)	„	1919											
Tyrian (*Y*)	„	1919											
Tribune	J. S. White	1918											
Trinidad	„ „	1918											
Trojan	„ „	1918	276	26¾	10⅝	2	1075	27,000	36				
Truant	„ „	1919								3 4-in, 1 2-pr., 1 M., 4 L.	2 D.	98	301
Trusty	„ „	1919											
Torbay (*T*)	Thornycroft	1919											
Toreador (*T*)	„	1919	275¾	27½	10½	2	1075	29,000	36				
Tourmaline (*T*)	„	1919											
Sikh	Fairfield	1918											
Senator	Denny	1918											
Shark	Swan Hunter	1918	276	26¾	10⅝	2	1075	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	301
Scout	Brown	1918											
Scotsman	„	1918											
Torch (*Y*)	Yarrow	1918	273½	25¾	9⅝	2	930	23,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	256
Shikari	Doxford / Chatham	1924	276¼	26¾	10⅝	2	1075	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	95	301
Admiralty "V" Class:													
Vansittart	Beardmore	1919											367
Venomous	Brown	1919											353
Verity	„	1919											363
Volunteer	Denny	1919	312	29½	10⅝	2	1325	27,000	34				370
Veteran	Brown	1919											363
Wanderer	Fairfield	1919											367
Wishart (*T*)	Thornycroft	1920											374
Wren	Yarrow	1923	312	30¼	10·9	2	1350	30,000	35	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T.	130	370
Whitshed	Swan Hunter	1919											368
Wild Swan	„ „	1919											368
Witherington	J. S. White	1919											365
Wivern	„ „	1919											365
Wolverine	„ „	1920	312	29½	10⅝	2	1325	27,000	34				365
Worcester	„ „	1922											365
Whitehall	Swan Hunter / Chatham	1925											365
Witch	Thornycroft / Devonport	1925											365
Walpole	Doxford	1918											367
Whitley	„	1918								4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120	
Waterhen	Palmer	1918	312	29½	10⅜	2	1300	27,000	34				
Wryneck	„	1918											
Windsor	Scott	1918								4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T.	120	367
Wrestler	Swan Hunter	1918											
Woolston (*T*)	Thornycroft	1918	312	30½	10¾	2	1325	30,000	35	4 4-in., 1 2-pr., 1 M., 1 L.			374
Wolsey (*T*)	„	1918									2 T.	120	374
Wessex	Haw. Leslie	1918	312	29½	10·7	2	1300	27,000	34				369
Winchester	J. S. White	1918	312	29½	10·7	2	1300	27,000	34	4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T.	120	369
Wolfhound	Fairfield	1918	312	29½	10·7	2	1300	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120	369
Westminster	Scott	1918								4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T.	120	367
Westcott	Denny	1918											
Wakeful	Brown	1917											
Walker	Denny	1918											
Walrus	Fairfield	1918											
Warwick	Haw. Leslie	1918											
Watchman	Brown	1918											367
Whirlwind	Swan Hunter	1918	312	29½	10·7	2	1300	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120	
Winchelsea	J. S. White	1918											
Vanessa	Beardmore	1918											
Vanity	„	1918											
Voyager	Stephen	1918											
Vidette	„	1918								4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T. 2 D.	120	367
Vivien	Yarrow	1918											
Valhalla	C. Laird	1917								4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T.		
Valentine	„	1917											
Valkyrie	Denny	1917	312	29½	10⅝	2	1325	27,000	34	4 4in., 1 2-pr., 1 M., 4 L.		120	369
Valorous	„	1917									2 T.		
Vampire	J. S. White	1917	..	..	..	..	..	..	..	4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 T.		

Great Britain—*continued*.

Name or Number.	Built by.	Completed.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS— *Admiralty "V" Class—contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Vancouver	Beardmore	1918	..	..	..	..	..	..	..	4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D.		
Vanoc	Brown	1917	..	..	..	..	..	..	..	4 4-in., 1 3-in. A.A., 1 M., 4 L.	2 D.		
Vanquisher	"	1917											
Vectis	J. S. White	1917									2 T.		
Vega	Doxford	1917											
Velox	"	1918	312	29½	10·7	2	1300	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D		
Vendetta	Fairfield	1917									2 T.		
Venetia	"	1917											
Venturous	Denny	1917	..	..	..	..	..	..	..	.. .. ..	2 T.	120	369
Verdun	Haw. Leslie	1917	..	..	..	..	..	..	..	4 4-in., 1 3-in A.A.	2 D.		
Versatile	"	1918								4 4-in., 1 2-pr.	1 T., 1 D.		
Vesper	Stephen	1918								4 4-in., 1 3-in.	2 T.		
Viceroy (*T*)	Thornycroft	1918	312	30½	10¾	2	1325	30,000	35		2 T.		
Viscount (*T*)	"	1918									2 T.		
Vimiera	Swan Hunter	1917	312	29½	10⅔	2	1300	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T.		
Violent	" "	1917									2 T.		
Vivacious	Yarrow	1917	312	29½	10⅔	2	1300	27,000	34		2 T.		
Vortigern	J. S. White	1918									2 T. 1 D.		
Admiralty "R" Class;													
Tancred	Beardmore	1917									2 D.		
Tarpon	Brown	1917	276	26¾	10⅔	2	1065	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	296
Telemachus	"	1917									1 D.		
Tempest	Fairfield	1917	275½	26⅝	10⅔	2	1065	27,000	36	3 4-in., 2 3-pr., 1 2-pr., 1 M., 4 L.	2 D.	98	296½
Tenacious	H. & Wolff	1917	275¾	26⅔	10⅔	2	1065	27,000	36				
Tetrarch	"	1917	275¾	26⅔	10⅔	2	1065	27,000	36				
Thisbe	Haw. Leslie	1917	275½	26¾	10⅔								
Thruster	"	1917				2	1065	27,000	36				
Tormentor	Stephen	1917	276½	26¾	10⅔								
Torrid	Swan Hunter	1917	275¾	26¾	10⅔								
Truculent (*Y*)	Yarrow	1917											
Tyrant (*Y*)	"	1917	271½	25¾	9½	2	900	23,000	36				
Taurus (*T*)	Thornycroft	1917											
Teazer (*T*)	"	1917	276¼	27	10½	2	1065	29,000	35				
Satyr	Beardmore	1917											
Sharpshooter*	"	1917	275½	26⅝	10⅔								
Skate	Brown	1917	276	26¾	10⅔								
Starfish	Haw. Leslie	1916								3 4-in., 1 2-pr., 1 M., 4 L.			
Stork	"	1917				2	1065	27,000	36		2 D.	98	300 (*Y*) 256 (*T*) 285
Romola	Brown	1916	275½	26¾	10⅔								
Rowena	"	1916											
Restless	"	1916											
Redgauntlet	Denny	1917	276	26¾	10⅔								
Retriever (*T*)	Thornycroft	1917	274	27⅓	10⅓	2	1035	29,000	35				
Salmon	H. & Wolff	1916	275¾	26¾	10⅔								
Sable	J. S. White	1916	275¾	26¾	10⅔	2	1065	27,000	36				
Sorceress	Swan Hunter	1916	276	26¾	10⅔								
Radstock	"	1916											
Raider	"	1916	275¾	26¾	10⅔								
Sabrina (*Y*)	Yarrow	1916	271½	25¾	9½	2	900	23,000	36				
Rapid (*T*)	Thornycroft	1916	274¼	27⅓	10	2	1035	27,500	35				
Admiralty Modified "R" Class:													
Ulster	Beardmore	1917											
Umpire	Doxford	1917											
Undine	Fairfield	1917											
Urchin	Palmer	1917	276	26¾	10⅝	2	1085	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D.	98	300
Ursula	Scott	1917											
Tower	Swan Hunter	1917											
Trenchant	J. S. White	1917											

* H.M.S. Sharpshooter will be shortly placed on sale list.

Great Britain—*continued.*

Submarines.

Name or Number.	Where Built.	Completed.	Dimensions. Length.	Beam.	Draught.	No. of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Oberon	Chatham ..	Bldg.	..	..	..	..	1,345 / 1 750	..	..	..	..	..	..
X1 ..	Chatham ..	1925	363½	29·8	15·7	..	2 525 / 3 600	..	..	..	..	100	..
R10 ..	Armstrong ..	1919	163	15·5	11·6	..	420 / 500	240 / 1,200	9½ / 15	..	6	23	13
R4 ..	Chatham ..	1919											
M3 (late K20)	Armstrong ..	1920	303	24·5	15·75	..	1,600 / 1,950	2,400 / 1,600	15½ / 9½	1 12-in., 1 3-in.	4	68	76
M2 (late K19)	Vickers ..	1920	296	24·5	15·75	..	1,600 / 1,950	2,400 / 1,600	15½ / 9½	..	4	..	76
L71 ..	Scott's ..	1920								2 4-in., 1 Lewis			
L69 ..	Beardmore ..	1923											
L56 ..	Fairfield ..	1919	235	23·5	13·2	..	960 / 1,150	2,400 / 1,600	17½ / 10½	1 4-in., 1 Lewis	6	44	72
L54 ..	Denny ..	1924											
L53 ..	Armstrong ..	1925								2 4-in., 1 Lewis			
L52 ..	Armstrong ..	1921											
L33 ..	Swan Hunter	1919								1 4-in., 1 Lewis	4	41	
L27 ..	Vickers ..	1926								1 4-in., 1 Lewis	4	41	
L26 ..	Vickers ..	1926								16 mines	4	41	
L25 ..	Vickers ..	1920								1 4-in., 1 Lewis	4	41	
L23 ..	Vickers ..	1924								1 4-in., 1 Lewis	6	41	
L22 ..	Vickers ..	1921								1 4-in., 1 Lewis	6	41	
L21 ..	Vickers ..	1920								1 4-in., 1 Lewis	4	41	
L20 ..	Vickers ..	1919								1 4-in., 1 Lewis	4	41	
L19 ..	Vickers ..	1919								1 4-in., 1 Lewis	6	41	
L18 ..	Vickers ..	1919	238½	23½	11·7	..	800 / 1,080	2,400 / 1,600	17½ / 10½				76
L17 ..	Vickers ..	1918								1 Lewis, 16 mines	4	41	
L16 ..	Fairfield ..	1918								1 4-in., 1 Lewis	6	41	
L15 ..	Fairfield ..	1918								1 4-in.	4	41	
L14 ..	Vickers ..	1918								1 Lewis, 16 mines	4	41	
L12 ..	Vickers ..	1918								1 Lewis	6	41	
L11 ..	Vickers ..	1918								1 4-in., 1 Lewis	6	41	
L8 ..	Cammell Laird	1918								1 4-in., 1 Lewis	4	41	
L7 ..	Cammell Laird	1917								1 4-in., 1 Lewis	4	41	
L6 ..	Beardmore	1918								1 4-in., 1 Lewis	4	41	
L5 ..	Swan Hunter	1918								1 4-in., 1 Lewis	4	41	
L4 ..	Vickers ..	1918	231	23½	11·7	..	800 / 1,070	2,400 / 1,600	17½ / 10½	..	4	41	76
L3 ..	Vickers ..	1918								..	4	41	
L2 (late E58)	Vickers ..	1917								1 4-in., 1 Lewis	4	42	
L1 (late E57)	Vickers ..	1917								1 4-in., 1 Lewis	4	41	
K26 ..	Vickers ..	1923	351½	28	16·8	..	2,140 / 2,770	10,000 / 1,400	23½ / 9	3 4-in., 2 Lewis	10	58	300
H52 ..	Pembroke ..	1919											
H50 ..	Beardmore ..	1920											
H49 ..	Beardmore ..	1919											
H48 ..	Beardmore ..	1919											
H47 ..	Beardmore ..	1919											
H44 ..	Armstrong ..	1920											
H43 ..	Armstrong ..	1919											
H34 ..	Cammell Laird	1919											
H33 ..	Cammell Laird	1919											
H32 ..	Vickers ..	1919	171	15·75	13	..	440 / 500	480 / 320	13 / 10½	..	4	23	16
H31 ..	Vickers ..	1919											
H30 ..	Vickers ..	1918											
H29* ..	Vickers ..	1918											
H28 ..	Vickers ..	1918											
H27 ..	Vickers ..	1918											
H26 ..	Vickers ..	1918											
H25 ..	Vickers ..	1918											
H24 ..	Vickers ..	1918											
H23 ..	Vickers ..	1918											
H22 ..	Vickers ..	1918											

6 Submarines are authorised for laying down in 1926.

* H29 recently placed on sale list.

Sloops.

Of the large number of sloops built during the war for patrol and other duties, only thirty-two now remain in the Post-War Fleet—some in commission abroad and others for subsidiary and training duties in home waters.

Names are as follow: Harebell, Windflower, Chrysanthemum, Bryony, Sweetbriar, Heather—1290 tons; length, 276 ft.; H.P. 2500; speed, 16½ knots; armament, two 4-in., two 12-prs. (Heather has one 4-in., one 12-pr., and one 3-pr. A.A.).

Cornflower, Crocus, Cyclamen, Delphinium, Godetia, Lupin, Rosemary, Snapdragon, Valerian, Verbena, Wallflower, Wistaria—1250 tons; length, 267¾ ft.; H.P., 2000; speed, 16½ knots; armament, two 4-in., four 3 pr. A.A.

Clematis, Heliotrope, Daffodil, Bluebell, Magnolia, Laburnum, Veronica, Vulcan II. (*late* Lily), Dahlia, Foxglove, Hollyhock—1200 tons; length, 262½ ft.; H.P. 1800; speed, 16½ knots; armament, two 4-in., four 3-prs., one or two 2-prs.

Ladas, and Sir Hugo—1320 tons; length, 276½ ft.; H.P., 2500; speed, 17 knots.

TWIN-SCREW MINE-SWEEPERS.

The following are retained in the Post-War Fleet:—

Aberdare, Abingdon, Alresford, Albury, Badminton, Bagshot, Burslem, Carstairs, Caterham, Derby, Dorking, Dundalk, Dunoon, Elgin, Fareham, Faversham, Fermoy, Ford, Forres, Gainsborough, Gretna, Harrow, Huntley, Kendal, Leamington, Lydd, Mallaig, Malvern, Marazion, Marlow, Mistley, Nailsea, Newark, Northolt, Pangbourne, Petersfield, Ross, Rugby, Saltash, Saltburn, Selkirk, Sherborne, Shrewsbury, Stafford, Stoke, Sutton, Tedworth, Tiverton, Tonbridge, Tralee, Tring, Truro, Weybourne, Widnes, Yeovil —800 tons; length, 231 feet; H.P., 2200; speed, 16 knots; armament, one 4-in., one 12-pr.

Most of the foregoing form a "Central Reserve of Twin-Screw Mine-sweepers." In addition, the following are employed on surveying duties:—

Beaufort, Fitzroy, Flinders, Kellet.

Displacement, 800 tons; length, 231 ft.; H.P., 2200; speed, 16 knots; armament, one 3-pdr.; 140 tons of coal; complement, 74.

Other surveying ships, of new types, are the Herald (*ex*-Merry Hampton), the Ormonde, and the Iroquois; and of old types, the Endeavour.

PATROL BOATS.

The following are retained in the Post-War Fleet:—

Spey, P 40, P 59, Dart, PC 74.

Spey and P's displacement, 613 tons; length, 244½ ft.; H.P., 3500; speed, 20 knots; armament, one 4-in., one 2-pdr.; oil, 93 tons; complement, 54.

Dart and PC 74's displacement, 694 tons; length, 247 ft.

Argentine Republic.

Name or Number.	Where Built.	Launched	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS*—													
Catamarca	Schichau ..	1911	288·7	27	8·6	2	950	18,000	32	3 4-in.	4	100	360
Jujuy	Germania ..												
Cordoba	Shichau ..	1910	295	29·5	7·8	..	950	20,000	34·7	3 4-in.	4	100	310
La Plata	Germania ..	1911											
TORPEDO BOATS—													
Corrientes	Yarrow ..	1896	190	19·5	8·2	2	340	4,000	27·4 *t.*	1 14-pr.,	3	66	80
Missiones	Yarrow ..	1896							26·0 *t.*	3 6-prs.,			
Entre Rios	Yarrow ..	1896							26·7 *t.*	and 2 1-pr.			
Comodoro Py ..	Thornycroft	1890	150	14·5	3·5	..	110	1,700	24·5	2 3-pr, 1 M.	3	43	24
Murature	"												
Buchardo	Yarrow ..	1890	130	14	6	..	85	1,200	23	2 3-pr., 1-M.	3	28	22
Jorge													
Thorne													
Bathurst													

* To be modernised and converted to all oil burning in U.S.A.

Brazil.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Para	Yarrow ..	1908	240	23·6	10	2	560	7,014	27·25	2 4-in., 4 3 prs.	2	..	140
Amazonas		1908						6,898	27·17				
Piahuy		1908						6,563	27·21				
Matto Grosso		1908						7,403	27·16				
Parahyba..		1909						6,700	27·29				
Rio Grande do N. ..		1909						7,778	27·27				
Alagoas		1909						7,403	27·25				
Santa Catharina ..		1909						6,982	27·30				
Parana		1910						8,877	28·74				
Sergipe		1909						8,554	27·60				
Maranhao	Thornycroft..	1913	265·3	26·5	10·2	..	934	22,500	31	3 4-in., 1 2-pr.	2	..	250
TORPEDO BOATS—													
Goyaz	Yarrow ..	1907	152·5	15·3	..	3	..	..	26·5	2–3 prs.	2	..	..
SUBMARINES—													
1 in No.	Spezia (Ansaldo Fiat)	Bldg	282	25·6	15·2	..	$\frac{1370}{1850}$	..	..	..	..	..	..
F 1	Spezia (Fiat)	1914	150	13·6	12	..	$\frac{250}{370}$	$\frac{800}{500}$	$\frac{13·5}{8}$	..	2	..	..
F 3													
F 5													

Six *ex*-German torpedo-boats were allotted to Brazil, to be used for police purposes. A Laurenti submarine salvage and testing vessel, named Ceará, 3800 tons, 328 ft. long, 50 ft. beam, 14 knots.

Chile.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Almirante Lynch, Condell..	White.. ..	1912 1913	320	32·6	11·1	3	1850	30,000	31·7	6–4-in. 2 M.	4	160	507
Almirante Riveros (*ex*-Broke) .. Almirante Uribe (*ex*-Faulknor) .. Almirante Williams (*ex*-Botha)	White ..	1914	320	32·6	11	3	1700 to 1740	30,000	31·5	2–4·7-in., 2–4-in.	4	160	486
Capitan Orella ..	Laird	1896	210	21·5	5·4	2	300	6,000	30·17	1-12 pr. Q.F. 5-6 pr.	2	65	90
Capitan Muñoz Gamero..	Laird	1896	210	21·5	5·4	2	300	6,000	30·42	1–12 pr. Q.F. 5–6 pr.	2	65	90
Teniente Serrano ..	Laird	1896	210	21·5	5·4	2	300	6,000	30·35	1–12 pr. Q.F. 5-6 pr.	2	65	90
Guardia-Marina Riquelme	Laird	1896	210	21·5	5·4	2	300	6,000	30·09	1–12 pr. Q.F. 5–6 pr.	2	65	90
Capitan Merino Jarpa .. .. .. Capitan O'Brien ..	Laird	1901	210	21·5	5·4	2	350	6,000	30	Do.	2	65	90
Captain Thompson..	Armstrong .	1902	210	21·5	5·5	2	350	6,500	28	6–6 pr.	2	65	120
SUBMARINES—													
H 1 .. .. H 2 .. .. H 3 .. .. H 4 .. .. .. H 5 .. .. H 6	Fore River, U.S.A.	1915	150·3	15·75	12·3	..	355/470	480/640	13/11	..	4	22	17·5

Denmark.

Name or Number.	Where built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
TORPEDO BOATS. FIRST CLASS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
B10. Havkatten	Royal Dockyard, Copenhagen	1919	126·3	13·9	9	2	108·5	2,000	24·6	2 6-pr. A.A.	2	22	15
B11. Sælen ..		1919											
B9. Nordkaperen		1918											
B8. Makrelen ..		1918											
B7. Narhvalen ..		1917											
B6. Havhesten ..		1917											
B5. Söhunden ..		1917											
B4. Sölöven ..		1916											
B3. Stören ..		1916											
B2. Springeren ..		1916											
B1. Ormen ..		1907	124·6	14·3	8·5	1	105	2,100	26	2 1-pr.	3	21	11
E3. Sværdfisken		1913	148·2	16·9	7·5	2	190	3,480	26·2	1 6-pr.	4	30	28
E2. Delfinen ..		1913											
E1. Hvalrossen ..		1913											
D3. Söülven ..	Burmeister, Copenhagen	1911	181·7	18	9·7	2	275	5,000	27·5	2 12-pr.	5	33	55
D2. Flyvefisken		1911											
D1. Sörldderen ..	Yarrow & Co.	1911											
C3. Spaekhuggeren	Royal Dock., Copenhagen	1911	184·8	19·1	7·1	2	300	5,000	27·5	2 12-pr.	5	34	49
C2. Vindhunden													
C1. Tumleren ..	Schichau												
A2. Sobjornen ..	Royal Dockyard, Copenhagen	1898 recon. 1908	147	15·5	7·5	..	140	2,100	23	1 3-pr.	4	25	15
A2. Havornen ..		1897 recon. 1902											
A1. Hajen		1896 recon. 1908											
SUBMARINES—													
Daphne	Royal Dockyard, Copenhagen	Bldg.	134½	12·3	7·8	..	400	..	..	1 3-in. A.A.	6	..	..
Dryaden	,,	Bldg.	..	..	..	..	..	900/600	..	..	..	..	..
Flora. C3 ..	,,	1919	155·7	14·4	3·8	..	301/369	900/640	14·5/10·5	1 6-pr.	4 5	17	13
Bellona. C2 ..	,,	1919											
Rota. C1 ..	,,	..											
B12. Galathea ..	,,	..	133·3	12·3	8	..	181/231	450/340	13·5/9·8	1 6-pr.	3	12	9
Neptun. B11 ..	,,	..											
Triton. B10 ..	,,	1914											
Ran. B9	,,	1915											
Aegir. B8	,,	1914											
Nymfen. A7 ..	,,	1914	127·2	12	7·6	..	161/201	450/275	13·0/9·3	..	2	12	8
Najaden. A6 ..	,,	1913											
2 den April. A5..	,,	1913											
Thetis. A4	Whitehead & Co., Fiume	1912											
…vfruen. A2 ..		1912											
…manden. A3		1911											

France.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
FLOTILLA LEADERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Lion	Dunkirk												
Bison	Lorient	Bldg.	426·5	38·7	..	..	2,690	64,000	36	5 5·5 in., 4 1·5 in. A.A.	6	..	..
Guépard	Lorient												
Chacal	St. Nazaire	1924											
Jaguar	Lorient Dy.	1923											
Leopard	St. Nazaire	1924	393	36	14·8	2	2,360	50,000	35·5	5 5-in., 2 2·9-in. A.A., 2 1·7-in., torpedoes.	6	206	540
Lynx	,,	1925											
Panthère	Lorient Dy.	1924											
Tigre	Nantes	1924											
Amiral Sénès, ex S. 113	Germany	1918	360	36	14·8	2	2,380	56,000	36·9	4 5·9-in., 4 M.	4 dbl.	180	700
DESTROYERS—													
Basque	Maritime	Bldg.											
Bordelais	Caen	Bldg.	351·7	32·2	..	..	1,500	35,000	33	4 5·1 in., 2 1·5 in. A.A.	6	..	..
Boulonnais	Bordeaux	Bldg.											
Brestois	Nantes	1926											
L'Adroit	Dunkirk	Bldg.											
L'Alcyon	Harfleur	1926											
Le Fortune	Caen	Bldg.	350	32·2	9·7	..	1,475	35,000	34	4 5·1 in., 2 1·5 in. A.A.	6	..	..
Le Mars	Caen	Bldg.											
La Palme	Nantes	1926											
La Railleuse	Nantes	Bldg.											
Bourrasque	Dunkerque	1925											
Cyclone	Havre	1925											
Mistral													
Orage	Caen	1924											
Ouragon													
Simoun	St. Nazaire	1924	326	31·7	10·2	2	1,430	30,000	33·5	4 5·1-in., 1 2·9-in. A.A., 2 1·7-in., torpedo tubes.	6	140	350
Sirocco													
Tempête	Nantes	1925											
Tramontane	Bordeaux	1924											
Trombe													
Typhon	Harfleur	1925											
Tornade	Bordeaux	1925											
*Bouclier	Normand	1911	237·0	24·9	9·4	3	790	13,000	35·33	2 3·9-in. 4 9-pr.	4	70	140
†Carquois	Rochefort	1906	197·4	21·5	11·5	2	350	6,400	28	1 9-pr. 6 3-prs.	2	70	80
*Casque	Havre (F.&C.)	1910	246·4	25	10·0	3	820	14,400	34·90	2 3·9-in. 4 9-pr.	4	70	160
Cavalier	Normand	1910	222·0	21·8	10·5	3	527	8,600	31·19	6 9-prs.	2	70	110
‡Cimeterre	Bordeaux	1911	243·4	26	10·0	2	894	13,500	31·15	2 3·9-in. 4 9-pr	4	70	140
Fanfare	Normand	1907	196·8	21·7	11·5	2	350	6,400	28	1 9-pr. 6 3-prs.	2	70	80
Glaive	Rochefort	1908	197·4	22·4	11·8	2	358	6,800	27·90	1 9-pr. 6 3-prs.	2	70	80
Lansquenet	Bordeaux	1909	221·0	20·8	10·0	3	542	8,129	28·8	6 9-prs.	3	71	100
Mameluck	Nantes	1909	216	22·8	10·0	2	407	7,750	30·5	6 9-prs.	3	71	100
Massue	Toulon	1908	197·4	21·7	11·4	2	350	6,800	28·4	1 9-pr. 6 3-prs.	2	70	80
Mortier	Rochefort	1906	197·4	21·5	11·5	2	350	6,400	28	1 9-pr. 6 3-prs.	2	70	80
Poignard	Rochefort	1909	197	22	11·5	2	358	6,800	28	1 9-pr. 6 3-pts.	2	70	80
Sape	S. de S. Nazaire	1907	197·4	21·5	11·5	2	350	6,400	28	1 9-pr. 6 3-prs	2	70	80
Spahi	Havre	1908	224	21·7	10	2	455	9,000	29·4	6 9-prs.	3	71	100
Trident	Rochefort	1907	197·4	21·5	11 5	2	350	6,400	28	1 9-pr. 6 3-prs.	2	70	80
‡Com. Bory, ‡ Francis Garnier, Com. Rivière, ‡Capt. Mehl, *Dehorter (5)	Normand, &c.	1912	253·6	25·4	10·0	3	780	14,100	31	2 3 9-in., 4 9-prs.	4	84	140
*Bisson, *Protet, *Magon, *Comm. Lucas, *Mangini (4)	Toulon, etc.	1912 & 1913	272·4	26	10·0	3	800–850	15,000	31	2 3·9-in., 4 9-prs.	2 dbl.	84	140
Enseigne Henry, Aspirant Herbert (2)	Rochefort	1911 & 1912	221	21·6	10·3	2	475	7,500	28·5	6 9-prs.	3	70	100
Ens. Roux, M. P. Lestin	Rochefort	1915–1920	271	28	10·0	2	880	17,000	30	2 3·9-in., 4 9 prs.	3 dbl.	81	200
Ens. Gabolde	Havre	1921	271	26·9	10·0	2	900	20,000	32·5	3 3·9-in. 1 14-pr.	4	..	200
Buino, ex V. 130	Germany	1917	269	28	10·0	2	1,150	25,000	34·7	3 4-in., 2 M., 24 mines.	6	..	360
Rageot de la Touche, ex H. 146	Germany	1917	279·8	27·4	10·0	2	1,110	23,800	33·3	3 4-in., 4 M., 40 mines.	6	..	330
Delage, ex H. 147	Germany												
Deligny, ex S. 139	Germany												
Chastang, ex S. 133	Germany	1917	272·3	27·3	10·0	2	1,030	24,000	33·7	3 4-in., 4 M.	6	..	300
Vesco, ex S. 134	Germany												
Mazare, ex S 135	Germany												
P. Durand, ex V. 79	Germany	1915	269	28	10·0	2	1,170	23,000	30·2	3 4·1-in., 4 M., 24 mines.	6	..	300

12 additional flotilla leaders will be laid down during 1926-1929, 3 of these of the "Lion" type have been authorized for laying down before July 1, 1927.

* Fitted as minesweeper. † Fitted as minelayer. ‡ Condemned and recently placed on sale list.

France—*continued*.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement. Surf-sub.	Indicated Horse-Power.	Maximum Trial Speed. Surf-sub.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS—*Contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Matelot Leblanc, *ex* Dukla	Fiume ..	1916	277	25 7	10·0	2	836	17,000	32·5	2 3·9-in., 6 smaller.	4	102	..
Téméraire, Intrépide, Opiniâtre, Aventurier	Nantes ..	1911	290	28·5	9 0	..	1080	18,000	32	4 3·9-in. 2 3-pr. A.A.	4	102	330
Annamite, Algérien, Arabe, Bambara, Hova, Kabyle, Marocain, Sakalave, Sénégalais, Somali, Tonkinois, Touareg ..	Japan	1917	272	24	10·0	..	770	10,000	29	1 4·7 in., 4 12-prs.	2 dbl.	87	220

14 additional destroyers will be laid down between 1926 and 1929. Will probably be armed with 5·5-in. guns; four of these of the "Basque" type have been authorized for laying down before July 1, 1927.

Name or Number.	Where Built.	Launched.	Length.	Beam.	Draught.	Number of Screws.	Displacement. Surf-sub.	Indicated Horse-Power.	Maximum Trial Speed. Surf-sub.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
SUBMARINES—													
Pascal, Pasteur	Brest												
Poncelet, Henri Poincare	Lorient ..	Bldg.	..	..	..	..	..	..	..	..	..	..	..
Archimede, Fresnel, Monge			..	..	..	..	1560-2000	...	18–10	1 3·9-in. 1 1.5-in. A.A.	10		
*Saphir	Toulon ..												
*Turquoise	Toulon ..	Bldg.	..	..	..	..	..	..	..	..	..	..	...
Redoubtable, Vengeur	Cherbourg ..	Bldg.		..	..	..	..	..	..	..		..	..
Requin, Morse, Narval, Souffleur, Caiman	Cherbourg ..	1924, 1925, 1925, 1924, 1926	256·5	21·5	15	2	1130-1415	2900-1800	16-10	1 3·9-in.	10	..	..
Dauphin, Espadon	Toulon ..	1925, 1926											
Marsouin, Phoque	Brest	1924, 1926											
Diane, Meduse, Argonaut, Arethuse	..	Bldg.	..	..	..	..	..	..	..	..	..	..	..
Ariane, Ondine, Danaé, Eurydice	Havre	1925, 1926, Bldg., 1925	216·5	16	11·5	2	590-758	1250-1000	14-9·5	1 3·9-in. A.A.	7	..	..
Circé, Calypso, Doris, Thetis	Chalons ..	1925, 1926, Bldg., Bldg.	204·5	17·5	11	2	590-758	1250-1000	14-9·5	1 3·9-in. A.A.	7	..	..
Naïde, Sirène, Nymphe, Galatée	St. Nazaire	1925, 1925, Bldg., 1925	210	17	11·5	2	590–750	1300-1000	14-9·5	1 3·9-in. A.A.	7	..	..
Brumaire, Euler	Cherbourg ..	1911, 1912	171	18·0	10·3	2	398-550	700	13–9	..	7	24	..
Newton, Curie	Rochefort .., Toulon ..	1912, 1912	168	16·4	10·3	2	398–550	840	13–9	..	7	24	..
Cornélie, Amphitrite, *Astrée	Rochefort ..	1913, 1914											
Artemis, Aréthuse, Atalante,	Toulon ..	1913, 1913	174	16·9	10·9	2	410-560	1,300	14-8	..	8	30	..
Andromaque	Cherbourg ..	1913											
Néréide	Cherbourg ..	1914	243	19·8	13·8	2	800–1000	2,400	16–10	1 14-pr.	8	40	..
Bellone, Hermione, Gorgone	Rochefort .., Toulon ..	1914 & 1915	198·9	17·7	11·9	2	520–790	1,800	16–9	1–3 pr. ..	8	29	..
Gustave Zédé	Cherbourg ..	1913	243	19·7	13·8	..	850-1100	2,900	16-10	1 14-pr. 1 3-pr.	8	40	..
Daphne	Cherbourg ..	1915	223	18·0	12·0	2	749 900	1800-1600	15-11	1 75-mm., 1 M.	10	40	..
Joessel, Fulton	Cherbourg ..	1917	243	20·0	13·4	2	915–1200	2900-1650	16½-11	2 14-pr. ..	8	40	..
Laplace, Lagrange, Romazzotti, Regnault	Rochefort .., Toulon .., Toulon ..	1917, 1917, 1918	247	21·0	13·0	2	840-1317	2,600	16½-11	2 14-pr. ..	8	..	..
Amazone, Antigone, Armide	Schneider ..	1916	184·6	17·0	10·6	2	467-665	2,000	17½-11	1 1-pr., 1 M.	6	..	..
O'Bryne, L. Dupetit-Thouars, Henry Fournier,	Chalons ..	1919 & 1920	172	15·6	9·6	..	335-502	1020-460	14–8	1 3-pr. ..	4	24	..
Dupuy de Lôme, Sané	Chalons ..	1916	246	20 9	13·7	..	854-1291	2900-1640	..	2 14-pr. ..	8	40	..
*Pierre Chailley ..	Havre	1922	229·7	24·7	13 3	..	886-1181	1800-1400	13·5-9	1 12-pr., 2 M. 40 mines	4	43	..

France—*continued.*

Number and Name.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement Surf.-sub.	Indicated Horse-Power.	Maximum Trial Speed. Surf.-sub.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
SUBMARINES—*Contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
*Maurice Callot	Bordeaux ..	1921	247·8	22	12·3	..	920–1270	2900–1600	16½–10	1 14-pr., 2 M. 27 mines	6	..	..
Pierre Marrast (ex-U. 162) .. .. .. / Jean Roulier (ex-U. 166)	„ ..	1918	235	21	12·7	2	820–1020	2400–1200	16–8·5	1 4-in., 1 M.	6	40	..
Halbronn (ex-U. 139)	„ ..	1918	302·2	29·5	15·5	2	2000–2516	3300–1780	13·6–7·7	1 5·9-in.	6	80	..
Jean Autric (ex-U. 105) / Leon Mignot (ex-U. 108)	„ ..	1917	235	21	12·5	..	835–1038	2400–1200	16·5–8·5	1 4 1-in., 1 M.	6	40	..
Jean Corre (ex-U.B. 155) .. .. / Carissan (ex-U.B. 99) / Trinité Schillemans (ex-U.B. 94)	„ ..	1917 1918	181	19	12	..	1060–760	1100–760	12–7·5	1 4·1-in., 1 M.	5	34	..
*René Audry .. .. (ex-U. 119)	„ ..	1917	267·5	24	14	..	1181–1525	2400–1200	14·5–7·2	1 5·9-in., 42 mines	4	40	..
*Victor Réveille .. (ex-U. 79)	„ ..	1916	200	19	16	..	797–877	1300–800	10–8	1 4·1-in., 36 mines	2	..	..

French submarines are now divided into two classes:—**1st class:** All vessels of 850 tons and above in the surface condition, including the U minelayers. **2nd class:** All smaller vessels.

21 1st class submarines projected to be laid down 1926–29, 5 to be "Pasteur" class to be laid down 1926.

2 cruising submarines projected to be laid down 1926–29, 1 to be "Redoubtable" class to be laid down 1926.

4 mine-laying submarines projected to be laid down 1926–29, 1 to be "Saphir" class to be laid down 1926.

It is proposed to lay down four 2nd class submarines each year 1927–29 inclusive. * Minelaying submarines.

Germany.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS—			Feet.	Feet.	Feet		Tons.		Knots.				Tons.
Seeadler	Wilhelms-haven	1926	..	..	..	..	773	..	34	4 4·1-in.	4	..	..
Greif		1926											
Albatross		1926											
W 106		Bldg.											
W 107		Bldg.											
Möwe	Wilhelmsh'n	1926	247·2	27·5	8·2	..	785	25,000	34	4 4·1-in.	4	..	..
S. 23	Shichau Elbing	1913	234·6	24·6	10							75	Coal 135 Oil 55
S. 19		1912											
S. 18		1912											
G. 11	Germania Works, Kiel	1911	233	25	9·8		650	15,000	32·5			73	Coal 140 Oil 60
G. 10													
G. 8													
G. 7		1912											
V. 6	Vulcan Works, Stettin	1913	233	25	9·8		660	15,000	32·5	4 4·1-in.	4	73	Coal 140 Oil 60
V. 5		1913											
V. 3		1911											
V. 2		1911											
V. 1		1911											
T. 196	Kiel	1911	213	26	10		638	16,000	32·5				
T. 190	Vulcan Works, Stettin	1910					646	16,000	32·5				
T. 185							626	16,000	32·5				
T. 175	Kiel	1910					643	16,000	31·5				

6 Destroyers are projected.

Greece.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Thyella .. .. .. / Sphendoni .. .. .. / Lonchi	Yarrow ..	1906	220	20·6	6·0	2	350	6000	31·79 / 31·84 / 32·53	2 12, 4 6-pr.	2	70	80
Smyrna (ex Austrian Ulan)	Trieste	1907	220	20	6·6	2	400	6000	28	4 11-pr., 2 11-pr., A.A.	2	86	90
Nike .. .. / Aspis .. .. .. / Velos	Stettin (Vulcan)	1906	220	20·6	7·2	2	350	..	30	2 12, 4 6-pr.	2	58	80
†Aetos, Leon, †Panther, Ierax ..	Birkenhead	1911	293	27·7	9·6	..	980	19,750	32	4 4-in., 1 6-pr., A.A.	4	110	225

Six 125-ton torpedo-boats built by the Vulcan Co. at Stettin: Arethusa, Doris, Aigli, Dafni, Alkyonis, Thetis, 25 knots.

The surrendered Austrian torpedo-boats: Pergamos, 92 F, 94 F, Proussa, 99 M and 100 M, 250 tons, have been added to the Greek Navy for police duties.

Six submarines have been ordered in France: the "Katsonis" at Harfleur and the Papanicolis at Nantes.

† Reconstructed by Messrs. J. S. White & Co., Cowes, 1924–25.

Italy.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons		Knots.				Tons
FLOTILLA LEADERS—													
Leone .. Pantera .. Tigere ...	Ansaldo ..	1923 1924 1924	359·3	34·3	11·5	..	2165	50,000	35	8 4·7-in. twins, 2 3-in. A.A., 60 mines.	2 triple	210	..
Aquila .. Falco.. ..	Pattison ..	1916	310	31	10·8	..	1530	40,000	35	4 4·7-in. twins, 5 4·7 in. (2 twins and 1 single), 4 14-pr. A.A., 50 mines.	2 dbl. 18-in. 2 dbl. 19·7-in.	140	..
Premuda .. (ex-German V116)	.. .. ..	1918	347·8	34	14·2	..	2290	45,000	35	4 5·9 in.	2 dbl. 19·7in.	..	..
Augusto Riboty .. Carlo Mirabello ..	Ansaldo ..	1915 1914	331·3	32·2	9·8	..	1520	35,000	35	8 4-in., 2 2-pr. A.A., 100 mines.	2 dbl. 18-in.	150	..
Alessandro Poerio .. Gulielmo Pepe ..	Genoa (Ansaldo)	1914	279	26·3	9·3	2	910	20,000	32	5 4-in., 2 2-pr., A.A.	2 dbl.	100	400
Cesare Rossarol, *ex*-German B97 ..	Hamburg	1915	321	30·9	9 9	2	1354	40,209	37·5	3 4·7-in., 24 mines, 2 14-pr. A.A.	6	..	526
DESTROYERS—													
Borea .. .. .. Zeffiro .. .. .. Espiro .. .. .. Ostro	Ansaldo, Genoa	Bldg.	305	30·2	10·6	..	1355	..	36	4 5-in.	6	..	..
Aquilone .. .. .. Turbine	Odero, Genoa												
Nembo .. .. .. Euro	Genoa Docks Co.												
N. Sauro .. .. .. C. Battisti .. .. F. Nullo .. .. D. Manin	Quanaro, Fiume	1926 1926 1925 1925	295	30·2	..	..	1300	30,000	35	4 4·7-in., 30 mines	6	..	..
Francesco Crispi .. Giovanni Nicotera Bettino Ricasoli .. Quintino Sella ..	Naples (Pattison)	1925 1926 1926 1925	271	28	10	..	1024	28,000	36	3 4·7-in.	6 18-in. or 4 23·4 -in.	106	220
Alpino .. .. .. Corazziere .. .. Pontiere .. .. .. Granatiere .. .. Fuciliere	Genoa (Ansaldo)	1906 1910	211·6	20·0	7·6	2	420	6,500	28·5	4 14-pdr.	3	55	82
Impavido.. .. .. Indomito .. .. .. Insidioso .. .. .. Irriquieto..	Naples (Pattison)	1912 & 1913	246	24·0	8·4	2	650	15,000	35·2	5 4-in., 2 2-pr., A.A.	2	71	110
Ardito .. .. .. Ardente	Orlando (Leghorn)	1912 & 1913	238	24·0	8·4	2	680	15,000	33·4	5 4-in., 2 2 pr., A.A.	2	71	110
Ascaro	Ansaldo ..	1912	211·5	20·0	7·0	2	390	6,000	29	2 14-pr. 4 6-pr.	3	50	80
Giuseppe Sirtori .. Vicenzo Orsini .. Francesco Stocco .. Giovanni Acerbi ..	Genoa (Odero)	1916 1917 1916 1916	238	24	9·0	2	800	17,000	33	6 4-in., 2 2-pr., A.A. Carries 10 mines.	4	100	150
E. Cosenz .. .. Glacoma Medici .. G. La Farina .. .. Nicola Fabrizi .. Angelo Bassini .. Giacinto Carini .. G. La Masca	Genoa (Odero)	1918 1917 1918 1917 1917 1917 1917	238	24	9·0	2	800	17,000	33	4 4-in., 2 12-pr., 2 M. Carries 10 mines.	4	100	150
Fratelli Cairoli .. Antonio Mosto ..	Naples (Pattison)	1914 1914						14,500	30·8				
Rosolino Pilo .. .. Giuseppe Abba .. Ippolito Nievo .. Simone Schiaffino .. .. Giuseppe Dezza .. Giuseppe Missori ..	Genoa (Odero)	1914 1915	236	24	8·8	2	750	17,000	32	5 4-in., 2 2-pr. A.A.	4	71	150

Italy—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—*contd.*													
Gen. A. Cantore, Gen. A. Chinotto, Gen. A. Papa, Gen. A. Cascino, Gen. M. Prestinari, Gen. C. Montanari	Genoa (Odero)	1921 1922	238	24	9·0	2	800	18,000	33	4 4-in., 2 14-pr.,	4	100	150
Audace	Yarrow	1918	275	27·6	8 3	2	955	21,500	36	1 4-in. 6 3-in.	2 dbl.	111	252
Animentoso, *ex*-S. 63	Schichau	1915	274	27·3	8 6	2	908	23,000	31·5	3 4·1-in.	6		305
Solferino, Palestro, S. Martino, Curtatone, Confienza, Castelfidardo, Calatafimi, Monzambano	Leghorn (Orlando)	1921 1922 1923	270 280	26·5	8·6	2	927	27,000	32	4 4-in., 2 12 pr., A.A.	4 6	..	170
Cortellazzo, Grado, Monfalcone, Muggia, Pola	Danubius *ex*-Austrian	1916 1920	275	25·5	8	2	850	20,600	32·5 33	2 3·9-in. 4 3-in. 2 3-in. A.A.	4	102	95
FIRST CLASS TORPEDO BOATS—													
Calipso, Climene	Naples (Pattison)	1909 1909	164·3	17·4	7	2	120	3,100	26·0	2 14-prs.	2	35	30
P.N., 2, 4, 7, 9, 12, 33, 34, 35, 38, 40–45, 64, 65, 67, 69–71	Pattison	1912 & 1913	139	13·9	5·5	2	130	2,500	27	1 6-pr.	2	..	15
A.S., 26–29, 52–57	Ansaldo												
O.S., 13–16, 18, 19, 24, 46–51	Odero	1914											
O.L., 58–63	Orlando	1916	139	13·5	5·5	2	157	3,000	27–29	2 14-pr. A. A.	2	..	25
O.L.T., 74, 75	Orlando	1920											
SUBMARINES—													
Ballila, A. Sciesa, E. Toti, D. Millelire	Spezia, Ansaldo	Bldg.	282·2	24·6	14·1	..	1300/1600	..	18–10	1 4·7-in.	6 21-in.	..	..
V. Pisani, M. Colonna, Speri, G Bausan	Monfalcone	Bldg.	223	18·7	13·8	..	805/950	..	17·5–9	1 4-in.	6 21-in.	..	..
Masaniello, P. Capponi, Da. Geneys, G. Da. Procida	Taranto	Bldg.	213·3	21·3	..	..	780/930	..	17·5–9	1 4-in.	6 21-in.	..	..
L. Galvani, E. Torricelli, P. Micca	Spezia	1917 1919								2 3-in. A.A.	6 18-in.	..	..
L. Mocenigo, L. Marcello, A. Emo	Venice		207·5	20·3	15·6	..	830/1000	2600/1230	15 9·5				
A. Barbarigo, A. Provana, G. Nani	Spezia, F.I.A.T.		218·0	19·0	15·6	..	740/920		17–9·2				
X 2, 3	Ansaldo	1917	139·9	18	11	..	400/460	660/320	9·2–6·3	1 3 in. A.A. 18 mines	2 18-in.	..	14½
H 1 to 4, 6 to 8	Vickers	1917	150	16	12	..	360/440	480/320	12–8·9	1 3-in. A.A.	4 18-in.	22	14
F 1, 2, 5, 6, 7, 9, 10, 12–21	F.I.A.T. Odero Orlando	1913 1917 1918	148	14	10	..	260/380	700/320	13·6–7·5	1 3-in. A.A.	2 17·7 in.	22	12
Argonauta	Ansaldo	1915	148·3	13·9	9–1	..	250/300	700/250	13–9	1 3-in. A.A.	2 18-in.	21	..
N 1 to N 4	Ansaldo	1917 1918	150	14	9–9	..	270/350	700/320	13·6–8	1 3-in. A.A.	2 18-in.	21	9
N 5, N 6	Taranto	1917											

In addition to the above, eight new destroyers are projected, to be laid down 1926–1928, four of these are authorised for laying down in 1926.

Eight additional submarines are projected, four of these are authorised to be laid down in 1926.

Japan.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS:			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
FIRST CLASS—													
No. 28	Uraga	1926											
29	Fujinagata	1926											
30	Ishikawa-jima	Bldg.											
31	Maizuru	1926					1800						
32	Sasebo	1926											
33	—	Bldg.											
34	Sasebo	1926											
35–42	—	Bldg.											
11	Uraga												
13, 25	Ishikawa-jima												
17, 19	Sasebo	1924–25	320	30	9·6	..	1400	38,500	34	4 4·7-in., 2 M. A.A.	6	..	..
21, 23	Maizura												
27	Fujinagata												
1, 3	Nagasaki	1922–23											
5, 7, 9	Maidzura	1922–24	320	30	9·6	..	1400	38,500	34	4 4·7-in., 2 M. A.A.	6	..	..
15	Fujinagata	1924											
Umikaze, Yamakase	Maidzuru and Nagasaki	1910–11	310·0	28·0	9·0	3	1150	20,500	33	2 4·7-in., 5 12-pr.	4	139	430
Amatsukaze, Tokitsukaze, Isokaze, Hamakaze	Kure and Nagasaki	1916	310·0	28·0	9·3	3	1227	27,000	34	4 4·7-in., 2 M. A.A.	6	145	340
Tanikase	Maidzuru						1300			3 4·7-in., 2 M.	6	128	..
Kawakase	Yokosuka						1300						
Sawakase	Nagasaki												
Okikase, Shimakase, Nadakase, Yakase, Hakase, Minekase	Maidzuru	1916–19	320	29·3	9·5	2	1345	38,000	34	4 4·7-in., 2 M.	6	145	..
Namikase, Numakase, Nokase, Tashikase, Shiokase, Hokase, Yukase, Akikase	Mitsubishi, Kawasaki, Maidzuru	1920–2	336·5	29·25	9·5	2	1345	38,500	34	4 4·7-in. 2 M. A.A.	6	..	..
SECOND CLASS—													
Nos. 2, 4	Kawasaki, Kobe	1922											
6, 16, 18	Fujinagata	1923	275·5	26	8	..	900	21,000	31·5	3 4·7-in., 2 M. A.A.	4	..	..
10, 12	Ishikawa-jima	1922–23											
8	Uraga	1923											
Sakura, Tashibana	Maidzura	1912	274	24·0	7·9	3	600	9,500	30	1 4·7-in. 4 12-pr.	4	92	230
Kaba, Kaede, Kashiwa, Katsura, Kiri, Kusunoki, Matsu, Sakaki, Sugi, Ume	Yokosuka, Maidzuru, Nagasaki, Kobe, Uraga, Sasebo and Osaka	1915	274·0	24·0	7·9	2	665	9,500	30	1 4·7 in. 4 12-pr.	4	92	230
Momo, Yanagi	Sasebo	1916–17	275·0	25·0	7·9	2	835	16,000	31·5	3 4·7 in., 2 M.	6	109	300
Kashi, Hinoki	Maidzuru												
Nara	Yokosuka												
Kuwa, Tsubaki	Kure												
Maki, Keyaki	Sasebo												
Enoki	Maidzuru	1917–18	275·0	26·0	8·0	2	835 / 900	21,000	31·5	3 4·7 in., 2 or 3 M., A.A.	4 or 6	110	..
Momi, Take, Nashi, Kaki, Kaya, Kure, Nire, Tsuga	Maidzuru, etc.												

Nineteen 3rd class destroyers of 375 tons, 6,000 shaft h.p., and 30 knots, carrying 6 12-pr. and 2 T.T. All these vessels were completed 17 to 20 years ago, and are now fitted as minesweepers.

Four 1st class destroyers are authorized for laying down in 1926.

Sixteen 1st class destroyers are projected for building 1927-30.

Japan—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tns.
DESTROYERS—*contd.* *Second class*—contd.													
Urakaze	Yarrow ..	1915	275·3	27·6	9·5	2	955	22,000	28	1 4·7-in., 4 12 pr.	4	117	248
Kiku, Aoi, Hagi, Susuki, Fuji, Tsuta, Hishi, Hasu, Ashi, Warabi, Sumire, Tade, Yomogi	Kobe, Uraga, Ishikawa-jima, Fujinagata, Kawasaki	1920-1922	275 5	26	8	2	850	21,000	31·5	3 4·7 in. 3 M., A.A.	4	110	..
SUBMARINES—		Completed.											
I1, I2, I3..	Kawasaki ..	1926	..	..	..	..	1970 / —	6000	17·5	..	6	..	..
*I21 .. .. *I22, *I23	Mitsubishi.. Mitsubishi..	1926 Bldg.	..	..	..	..	1000 / —	..	..	..	..	..	..
I53, I55 .. .. .. I54 .. .. I58	Kure .. .. Sasebo .. Yokusuka ..	1926 Bldg. Bldg.	..	..	..	..	1700 / 2000	..	..	..	..	..	..
Ro. 31	Kawasaki ..	Bldg.	..	...	..	..	770 / 1000	2600 / 1200	17 / 10	..	..	..	..
Ro. 65 .. .. .. Ro. 67	Mitsubishi.. Mitsubishi..	1926 Bldg.	..	..	..	..	1000 / 1500	..	15·5 / —	..	6	..	..
I. 51, 52	..	1924	..	..	..	..	1500 / —	6000 / —	..	..	..	..	..
Ro. 68, 64 .. .. Ro. 63, 62, 61 .. .. Ro. 60	.. .. ..	1925 1924 1923	250	24 2	12·4	..	1050 / 1500	..	15·5	1 12-pr.	6	47	..
Ro. 32, 30 .. .. 29	.. ..	1924 1923	..	..	..	..	770 / 1000	..	17 / 10	..	..	..	..
Ro. 28 .. .. .. 27 .. .. 26	.. .. ..	1923 1924 1922	230	20·1	12	..	750 / 1000	2600 / 1200	17 / 10	1 12-pr. 1 6-pr.	6 21-in	..	..
Ro. 59 .. .. .. 58, 57	.. ..	1923 1922	..	..	..	..	900 / 1082	2400 / 1200	17 / 10·5	1 12-pr. 1 3-pr.	4 21-in.	..	..
Ro. 25, 19, 18, 17 .. 24 .. .. 23 .. .. 22, 21, 20, 16 ..	.. ..	1921 1920 1923 1922	..	..	..	..	740 / 1100	2600 / 1200	18 / 10	1 12-pr. 1 3-pr.	6 18-in	..	..
Ro. 3, 4, 5	..	1922	..	..	..	..	700 / 1760	2600 / 1200	18 / 10	1 12-pr. 1 3-pr.	5 18-in.	..	..
Ro. 56, 55 .. .. 54, 53 .. .. .. 52, 51	.. .. ..	1922 1921 1920	..	..	..	..	900 / 1082	2400 / 1200	17 / 10·5	1 12-pr. 1 3-pr.	6 18-in.	..	..
Ro. 15, 14 .. .. 13	.. ..	1921 1920	..	..	..	..	740 / 986	2600 / 1200	17 / 10	1 12-pr. 1 3-pr.	6 18-in.	..	..
Ro. 12, 11	..	1919	..	..	..	..	720 / 1035	2600 / 1200	18 / 10	1 12-pr. 1 3-pr.	6 18-in.	..	..
Ro. 1, 2..	..	1920	..	..	..	..	700 / 1072	2600 / 1200	18 / 10	1 12-pr. 1 3-pr.	5 18-in.	..	..
Ha. 9 .. .. .. 10	.. ..	1920 1916	..	..	..	..	450 / 670	2200 / 800	17 / 10	4 dropping gear	2 18-in.	..	..
Ha. 7, 8..	..	1916	..	..	..	..	270 / 300	600 / 350	13 / 8	..	4 18-in.	..	..
Ha. 6	..	1912	..	..	..	..	300 / 330	1000 / 300	14 / 8	..	2	..	..
Ha. 3, 4, 5	..	1911	..	..	..	..	290 / 320	600 / 300	12·75 / 7·75	..	2	..	..
Ha. 1, 2..	..	1908	..	..	..	..	285 / 315	600 / 180	12·9 / 7·8	..	2	..	..

Thirteen additional submarines are authorised to be built, about 10 of these are about to be commenced. Five submarines are projected for laying down 1927-30,

*** Fitted for mine-laying.**

Netherlands.

Name or Number.	Where built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-power.	Maximum speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots				Tons.
DESTROYERS—													
*De Ruyter, *Evertsen, *Piet Hein, *Kortenaer	Flushing, Rotterdam	Bldg.	307 p.p. 322 o.a.	31·2	9·8	..	1620	..	34–36	4 4·7-in., 2 3-in. A.A.	6 21-in.	..	..
Bulhond, Jakhals (1910), Hermelijn, Lynx, Panter, Vos (1911)	Flushing, Rotterdam	1910–1913	230	22	9	2	510	8,500	30	4 13-prs., 4 M.	2	84	120
1ST CLASS TORPEDO BOATS—													
*Zeeslang, *Krokodil, *Draak, *Hydra	Flushing	1905	152·6	15·3	7·9	1	104	1200–1560	27	2 1-prs.	2	20	20
G 13-15-16	Scheldt, Fijenoord	1913–1914	162·5	17·3	9·0	..	180	2,600	26	2 13-prs.	3	25	40
Z 1-4 ..	Amsterdam	1916–1917	201	20·4	6	2	322	5,500	27	2 13-prs., 2 M	4	39	70
Z 5-8 ..	Scheldt, Fijenoord	1915	192	19·8	5·5	2	310	5,500, 5,700	27	2 12-prs., 2 M.	4	39	81
SUBMARINES—													
O 10 ..	Amsterdam	1925	179½	18·7	11½	..	506/627	900/—	12¾/9	1 12-pr. A.A., 1 maxim	5	..	21
*K 13, *K 12, *K 11	Fijenoord	1924	218	20·2	12·2	..	660/810	2,400/—	15/8	1 22-pr., 1 maxim	6	31	45
O 11 .., O 9 ..	Fijenoord, Flushing	1925, 1925	179½	18·7	11½	..	506/627	900/—	12¾/9	1 22-pr. A.A., 1 maxim	5	..	21
O 8 (*ex* British H6)	..	..	150·3	15·8	12·3	..	364/434	480/320	13/8·5	1 maxim	4	26	18
M1 (*ex*-German UC 8)	Hamburg	1915	111½	10·3	9	..	157/176	80/155	7½/5	1 4-pr., 12 mines	—	16	2½
O 7	Fijenoord	1916	112	12·8	9·5	..	177/206	350/185	11·5/8·5	1 maxim	3	12	5·4
O 6	De Schelde	1916	115·9	12·8	9·5	..	187/226	350/185	11·5/8·5			12	..
O 5, O 4, O 3, O 2	De Schelde, De Schelde, De Schelde, De Schelde	1913, 1913, 1912, 1911	105·3	10·2	9·5	..	129/147	300/170	11/8·5	1 maxim	2	10	3·6
*K 10, *K 9, *K 8	De Schelde	1923, 1922, 1922	212	18·3	11·9	..	560/690	1,550/630, 1,550/630, 1,800/630	15/8	1 22-pr., 1 maxim	4	29	45
*K 7, *K 6, *K 5	Fijenoord	1921, 1920, 1919	177·2	16·8	12·5	..	550/630	1,200/600	15/8	1 3-in., 1 maxim	6	29	76
*K 4, *K 3	De Schelde	1920, 1919	211·3	18·3	11·5	..	560/700	1,200/600, 1,800/600	15/8	1 3-in., 1 maxim.	6	29	45
*K 2	Fijenoord	1919	172·3	16·8	12·5	..	550/600	1,800/600	15/8	1 3-in., 1 maxim	6	29	76
*K 1	De Schelde	1913	159·6	15·4	10·2	..	315/374	1,800/650	15/8	..	3	17	16

* Indian Military Marine.

Norway.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Draug, Troll, Garm	Horten ..	1908–13	226	23·5	8·8	2	540	7,500	27·0	6 12-pdrs.	3	71	95
FIRST CLASS—													
Snoegg, Stegg, Trygg	Horten ..	1919–1920	173·9	18	5½	2	220	3,500	25	2 12-pdr.	4	31	30
SECOND CLASS—													
Hval, Delfin	Elbing ..	1896–1900	130·0	15·0	6·9	1	84	1,100	24·5	2 1·4-in.Q.F.	2	19	17
Storm, Brand, Trods	Horten ..		123·0	15·0	..	1	84	1,100	23	2 1·4-in.Q.F.	2	19	17
Laks, Sild, Sael, Skrei	Horten ..	1901	128·0	15·0	6·9	1	84	1,100	23	2 1·4-in.	2	19	17
Kjek, Hvas, Dristig, Kvik, Djerv, Blink,	Fredrikstad	1898	111·5	14·5	6·3	1	65	650	19	2 1·4-in.	2	..	..
Lyn, Hauk, Falk ..	Horten ..	1903											
Skarv, Teist, Lom, Jo, Grib	Horten ..	1906–7	134·5	14·9	..	1	100	1,700	25·0	2 3-pr.	2-3	18	16
Ravn, Orn	Horten ..	1903	119	14·9	6·4	1	73	1,035	22·5	2 1·4-in.	2	16	15
Kjeld..	Horten ..	1912	135	14·9	6·4	1	100	1,800	25	1 12-pr.	3	19	16
SUBMARINES—													
A 2, 3, 4	Germania Kiel	1909 to 1913	131·6	14·9	9·6	2	220 255	440 250	12 9	..	3	17	..
B 1, 2	Horten ..	1922	167·3	17·5	9·5	..	413–545	..	14.5/10	1 12-pr.	4	..	..
B 3, 4	Horten ..	1923–24											
B 5, 6	Horten ..	Bldg.											
MINING VESSELS:—													
Froeya	Horten ..	1917–	250	27	8½	2	755	..	22	4 4-in.	2	80	95
Glommen, Laugen..	Christiania..	1918	138	28	6½	2	335	350	9·5	2 12-pdr.	..	39	21

Russia.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Petroviski .. Nezamojni .. Tcerigo .. .. Shaumyan ..	Ship & Eng. Co., Nikolaev	1917	303·5	29·5	9	..	1326	29,000	33	3 4-in., 1 2-pr., 2 M., can carry 80 mines	12	..	390
Karl Marx .. Kalinin	Revel.. ..	1915	344·5	31·3	9·7	..	1350	32,700	35	4 4-in., 1 2-pr., 2 M., 80 mines	12	..	..
Mikhail	Revel.. ..	1915	314·75	30·5	9·75	..	1260	30,000	35	4 4-in., 1 2-pr., 2 M., 80 mines	12	..	..
Orphei .. .. Ouritsky	Leningrad..	1914–1915	321·5	30·5	9·25	..	1610	32,000	35	..	9	110	400
Volodarski .. Letun .. .. Engels .. .. Stalin .. .. Zinoviev .. .. Trotsky .. .. Lenin			314·75	30·5	9·75	..	1260	30,000	35	4 4-in., 1 2-pr., 2 M., 80 mines	12	110	350
Bezpokoini .. Gnyevni .. .. Derski	Nikolaev ..	1913-14	..	..	..	..	1088	25,500	34	3 4-in., 2 3-pr., 4 M.	10	..	..
Pospyeshni .. Frunze .. .. Pulki	Leningrad..	1913–14	..	..	..	..	1100	23,000	34	3 4-in., 2 3-pr., 4 M., 80 mines	10	..	..
SUBMARINES—													
Lenin .. .. Budenni .. .. Komintern ..	..	Bldg.	264	25·3	16·3	..	850	1,450	16/10	1 4-in.	5	..	..

Russia—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Length.	Beam.	Draught.								
SUBMARINES—*contd.*		†	Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Ag 26	..	1924	..	..	..	..	355/467	480/320	13/11	1 6-pr.	4	..	..
Ag 25	..	1922	..	..	..	..	375/467	480/320	13/11				
Ag 24	..	1922											
Ag 23	..	1920											
Nezamuzhnyaya ..	..	1919	..	..	..	..	..	..	..	1 4-in., 2 M.	6	..	..
Kommunist	..	1917	..	..	..	..	260/400	..	13/7·5	..	..	..	..
Proletary	..	1916	..	..	..		..	2640/900	16/9	1 6-pr., or 2 6-pr., 1 M.	4	..	..
Yaz	..	1917											
Forel	..	1917	..	..	..		..	840/900	11/9	42 mines	4	..	..
Rabotchky	..	1917	..	..	..		..	2640/900	16/9	42 mines	4	..	..
Volk	..	1916	..	..	..		..	500/840	10/9	2 6-pr., 1 1-pr.	4	..	..
Vepr	..	1915											
*Tyulen	..	1915	..	..	..		650/784	500/1400	10/11·7	1 4-in., 1 2-in., 2 M.	4	..	..
Politnik	..	1913											
*Utka	..	1916	..	..	..		..	500/900	10/9	2 11-pr., 1 1-pr., 1 M.	4	..	..
*Burysevyestnik ..	..	1918	..	..	..		..	2640/900	16/9	1 11-pr.	4	..	..
Kuguar	..	1917	..	..	..		..	2600/900	16/9				
Krasnoarmeyets ..	..	1917	..	..	..		..	500/900	10/9	2 6-pr., 1 1-pr., 1 M.	4	..	..
Komissar	..	1916											
Bolshevik	..	1916											
Komunar	..	1916											
Tovaristch	..	1916											
Krasnoflotetz ..	..	1916											

In addition to the above there are sixty older destroyers completed from 1895 to 1909 of very little if any fighting value. There are also twenty-four destroyers in various stages of completion, which it is very unlikely will ever be completed. Many of the above vessels are known to be practically useless until very extensively repaired and refitted.

* These ships are still at Bizerta, under French protection, but are about to be handed over to the Soviet Government.

† Dates are completion dates.

Spain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Length.	Beam.	Draught.								
FLOTILLA LEADERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Churraca	Cartagena ..	1925	320	31·8	10·5	2	1,650	42,000	36	5 4·7-in. 1 14-pr. A.A.	6	..	540
Alacala Galiano ..		1925											
Sanchez-Barcairtegui		Bldg.											
DESTROYERS—													
Alcedo	Cartagena ..	1922	275	27	10·5	2	1,145	33,000	34	3 4-in., 2 2-pr. A.A.	4	..	265
Velasco		1923											
Juan Lazaga		1924											
Proserpina	Clydebank ..	1897	229	22	9·9	2	457	7,500	30	2 14-pr. 2 6-pr. 2 1-pr	2	74	90
Bustamente	Cartagena ..	1913–1915	220	22	5·6	..	364	6,250	28	5 6-pr.	2	70	80
Villsamil	Cartagena ..												
Cadarso	Cartagena ..												
TORPEDO BOATS—													
22 boats	Cartagena ..	1913–1922	164	16·5	4·9	3	177	3,750	26	3 3-pr.	3	..	..
SUBMARINES—													
C 1-6	Cartagena ..	Bldg.	247	20·8	13·5	..	910/1290	2000/750	16/9	1 3-in. A.A.	6 21-in.	..	..
B 1-6	Cartagena ..	1921–24	208	17·9	11·25	..	560/830	1400/850	16/10·5	1 3-in.	4 18-in.	..	..
A 1-3	Spezia, Italy	1917	149·6	13·5	10·2	..	260/380	600/450	13/8·5	..	2	..	..
Isaac Peral	Fore River Co., U.S.A.	..	197	19	11	..	488/750	1100/580	15/10	1 3-in. A.A.	4	..	..

Submarines D 1-5, E 1-6, are authorized, but not laid down. A new 10½-years building programme authorizes the construction of 3 flotilla leaders, Churraca type, to be built at Cartagena, and 12 submarines.

Sweden.

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Nils Ehrensköld ..	Göteborg	Bldg.	293	29·2	10·5	..	1,050	25,000	35	3 4·7-in.	2 trpl.	..	..
O. H. Nordenskjold	Malmö												
Mode	Yarrow ..	1902	220·3	20 6	8·9	2	480	6,800	32·4	6 6-prs.	2	67	95
Magne	Thornycroft	1905	216·9	20·8	8·2	2	480	8,000–9,000	30·0	4 14-prs. 4 6-prs.	2 dbl.	67	90
Wale..	Malmo ..	1906											
Ragnar	Malmo ..	1909											
Sigurd	Gothenburg	1909											
Vidar	Malmo ..	1909											
Hugin	Gothenburg	1909											
Munin	Malmo ..	1910											
Wrangel	Gothenborg	1917	230	22	9·2	2	500	12,000	34·0	4 14-prs.	2 dbl.	..	10
Wachtmeister.. ..													
TORPEDO-BOATS—													
Plejad, Castor, Pollux	Normand & Carlskrona	1905–1909	125	14·4	6·6	1	106	1,900	26	2 1·5-in. Q.F.	2	18	20
Vega	Carlskrona..	1909	128	14·4	8·6	1	105	1,900	25	2 6-prs.	2	18	20
Vesta													
Spica, Astrea, Iris, Thetis	Bergsund and Gothenburg	1909	128	17·5	8·6	1	120	1,900	25	2 6-prs.	2	18	20
Altair	Stockholm ..	1908	128	17·5	8·6	..	110	2,000	25	2 6-prs.	2	18	20
Antares													
Argo													
Arcturus													
Perseus, Polaris ..	Bergsund ..	1910–	128	14·4	8·6	1	115	2,000	25	2 6-prs.	2	18	20
Regulus, Rigel ..	Stockholm ..	1915											
SUBMARINES—													
1st Class—													
Draken	Naval Yard, Karlskrona	Bldg.	..	..	..	..	500/650	2800/—	15/9	1 6-pr.	4	..	..
Grifen													
Bavern	Naval Yard, Karlskrona	1921	..	..	..	..	500/650	2800/—	15/9	1 6-pr.	4	..	..
Illern													
Uttern													
Delfinen..	Bergsund Co., Stockholm	..	..	..	..	..	300	..	..	..	..	..	..
Svärdfisken	Kockum Co., Malmo												
Tumlaren													
Sälen	Kockum Co., Malmo ..	1920	..	..	..	..	..	..	..	..	..	..	..
Valrossen													
Hajen													
Minelaying Sub.—													
Valen	..	1925	..	..	..	..	..	..	..	..	..	..	..
2nd Class—													
Aborren	Karlskrona D.Y.	1914–15	..	..	..	..	..	..	..	1 6-pr.	4	..	..
Braxen													
Laxen													
Gäddan													
No. 4	..	1908–09	139 4	14·8	9·8	..	175/225	1000/200	15/8	..	2	17	..
No. 3													
No. 2													

Also ten small torpedo-boats, 60 tons, built 1907–1908.

United States.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Length.	Beam.	Draught.								
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Pruitt													
Sicard	Bath, I.W.	1920											
Preble ..													
William B. Preston	Norfolk, N.W.	1920											
Noa		1921											
Hulbert ..		1920											
Decatur ..		1922											
Perry	Navy Yard, Mare Is.	1922											
Trever ..		1922											
Wasmuth ..		1921											
Zane		1921											
Litchfield ..		1920											
Melvin ..		1921											
Corry		1921											
Summer ..		1921											
Fahrenholt		1921											
MacDonough		1921											
Hull		1921											
Bruce ..		1920											
Lamson ..													
Preston ..													
Coghlan ..													
Mullany ..													
Robert Smith													
Chase		1921											
Mervine ..													
Marcus ..													
Selfridge ..	Bethlehem S.B. Co., Union Plant, San Francisco												
Kidder ..													
Shirk													
Wood ..													
Sloat													
La Valette ..													
Yarborough													
Zeilin													
William Jones													
Paul Hamilton													
Kennedy ..													
Thompson ..			314·4	31	9·8	..	1,215	27,000	35	4 4-in., 1 14-pr. A.A.	4 triple	122	375
Farquhar ..													
Reno		1920											
Stoddert ..													
Somers ..													
Farragut ..													
John Francis Burnes													
Percival ..													
Osborne ..													
Charles Ausburn													
Billingsley ..													
Reid		1919											
Converse ..		1920											
Dale		1920											
Flusser ..													
Worden ..													
Putnam ..													
Lardner ..													
Case													
Isherwood ..													
Breck	Bethlehem S.B. Co., Squantum												
Toucy ..													
Sharkey ..													
Doyen ..													
Meyer		1919											
Henshaw ..													
Moody ..													
McCawley ..													
Sinclair ..													
Meade ..													
Swasey ..													
Tingey ..													
Morris ..													
Thornton ..													
Bailey ..													
Shubrick ..													
Ballard ..													

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Destroyers—*continued.*													
Greene ..	Bethlehem												
Edwards ..	S.B. Co.,												
McLanahan	Squantum.												
Laub													
McDermut ..													
Gillis													
Turner.. ..													
Aulick ..													
Welles ..	Bethlehem	1919											
Bancroft ..	S.B. Co.,												
Osmond Ingram	Quincy												
Rodgers ..													
McCalla ..													
McCook ..													
Belknap ..													
Lawrence ..		1920											
Hopkins ..		1921											
Barry ..		1920											
Goff		1921											
Bainbridge ..		1921											
Reuben James													
Williamson													
Sands													
King													
Childs	New York												
Sturtevant ..	S.B. Co.												
Overton ..													
James K. Paulding		1920											
McFarland ..													
Humphreys													
Kane													
Fox													
Gilmer ..													
Brooks ..													
Hatfield ..													
Paul Jones		1921											
Truxton ..		1921	314·4	31	9·8	..	1,215	27,000	35	4 4-in., 1 14-pr. A.A.	4 triple	122	375
John D. Ford													
Pillsbury ..													
Peary ..													
Pope													
Stewart ..													
McCormick													
Bulmer ..													
Simpson ..		1920											
MacLeish ..													
Edsall													
Parrott ..	Cramp, Pa.												
Whipple ..													
J. D. Edwards													
Borie													
Tracy ..													
Barker ..													
Smith Thompson													
Alden ..													
Broome ..		1919											
Long													
Hovey ..													
Southard ..													
Chandler ..													
Dallas													
Herndon ..													
Branch ..		1920											
George E. Badger													
Welborn C. Wood		1921											
Hunt	Newport News S.B. Co.	1920											
Abel P. Upshur		1920											
Mason ..		1920											
Satterlee ..		1919											
Semmes ..													
Goldsborough		1920											
Dahlgren ..													

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—*continued.*													
Clemson ..		..	..	..	..	..	..	..	..	..	..	..	375
Bagley													
Abbot													
Haraden ..	Newport News S.B. Co.	1919	314·4	31	9·8	..	1,213	27,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Thomas ..													
Hopewell ..													
Stansbury ..		1920											
Howard ..		1920											
Hogan ..													
O'Bannon ..	Union I.W.												
Renshaw ..													
Mackenzie ..													
Kalk													
Foote ..													
Maddox ..		1919	314·4	31	9·8	..	1,191	27,000	35	4 4-in., 1 14-pr.	4 triple	122	283
Cowell ..													
Bush	Fore River S.B. Co.												
Meredith ..													
Crosby ..													
Walker ..													
Thatcher ..													
Palmer ..		1918											
Herbert ..													
Schenck ..	N.Y. S.B. Co.		314·4	31	9·8	..	1,211	26,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Leary ..													
Dickerson ..													
J. Fred Talbot													
Cole													
Ellis													
Bernadou ..		1919											
Dupont ..													
Biddle ..													
Blakeley ..													
Barney ..	Cramp, Phil.		314·4	31	9·8	..	1,154	26,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Breckenridge													
Roper													
Elliot ..													
Greer													
Upshur ..		1918											
Yarnall ..													
Tarbell ..													
Hamilton ..		1919											
Claxton ..		1919											
Ward	Mare Island, N.Y.	1918											
Kennison ..		1919											
Kilty		1918											
Boggs		1918	314·4	31	9·5	..	1,154	24,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Tillman ..		1921											
Crowninshield													
Hale	Bath I.W.												
Aaron Ward													
Buchanan ..													
Jacob Jones		1919											
Babbitt ..													
Twiggs ..	New York S.B. Co.		314·4	31	9·8	..	1,211	26,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Badger ..													
Tattnall ..													
Ramsay ..		1919											
Gamble ..													
Breese ..	Newport News S. Co.		314·4	31	9·8	..	1,213	25,000	35	4 4-in., 2 13-pr.	4 triple	122	286
Montgomery													
Radford ..													
Lamberton													
Lea		1918											
Dorsey ..													
Dent	Cramp, Pa.		314·4	31	9·8	..	1,154	26,000	35	4 4-in., 1 14-pr.	4 triple	122	286
Waters ..													
Talbot ..													
Rathburne ..													
Crane		1919											
Williams ..		1919											
Hazelwood	Union Plant.	1919											
Chew													
Mugford ..			314·4	31	9·8	..	1,191	27,000	35	4 4-in., 1 14-pr.	4 triple	122	283
Champlin ..													
Schley ..		1918											
Bell	Fore River S.B. Co.												
Taylor ..	Mare Island, N.Y.		314·4	31	9·8	..	1,154	24,200	35	4 4-in., 1 14-pr. A.A.	4 triple	122	286
Fairfax ..													
Gridley ..		1919											
Harding ..		1919											
McKean ..	Union I.W.	1919	314·4	31	9·9	..	1,191	27,000	35	4 4-in., 1 14-pr. A.A.	4 triple	122	286
Ringgold ..		1918											
Robinson ..		1918											
McKee		1918											

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Destroyers—*continued.*													
Stephens, Colhoun, Dyer, Stringham, Gregory, Sigourney, Kimberly, Little	Fore River S.B. Co.	1918	314·4	40	9·8	..	1,191	27,000	35	4 4-in., 1 14-pr. A.A.	4 triple	122	283
Evans, Philip, Wickes	Bath I.W.	1918	314·4	40	9·7	..	1,154	24,200	35	4 4-in., 1 14-pr. A.A.	4 triple	122	286
Manley		1917	315·5	30·7	9·5	..	1,125	20,000	32	4 4-in., 1 14-pr. A.A.	4 triple	122	260
Stockton, Conner	Cramp Pa.	1917, 1918	315·5	30·7	9·5	..	1,125	18,500	30	4 4-in., 1 14-pr. A.A.	4 triple	122	260
Gwin	Seattle D.D. Co.	1920	315·5	30·7	9·5	..	1,125	18,750	30	4 4-in., 1 14-pr. A.A.	4 triple	122	260
Craven	Norfolk, N.Y.	1918	315·5	30·7	9·5	..	1,125	20,000	32	4 4-in., 1 14-pr. A.A.	4 triple	122	260
Caldwell	Mare Island N.W.	1917	315·5	30·7	9·5	..	1,125	20,000	30	4 4-in., 1 14-pr. A.A.	4 triple	122	260
Shaw	Mare Island N.W.	1917	315·3	29·9	10·7	..	1,110	17,000	29·5	4 4-in., 1 14-pr. A.A.	4 triple	122	290
Wilkes	Cramp	1916	315·3	29·9	10·7	..	1,150	17,000	29·5	4 4-in., 1 14-pr. A.A.	4 triple	122	290
Allen, Davis	Bath I.W.	1917, 1916	315·3	29·9	9·8	..	1,071	17,500	30	4 4-in., 1 14-pr. A.A.	4 triple	122	290
Rowan, Sampson	Fore River S.B. Co.	1916	315·3	29·9	10·7	..	1,111	17,000	29·5	4 4-in., 1 14-pr. A.A.	4 triple	122	290
Wainwright	N.Y. S.B. Co.	1916	315·3	29·9	10·7	..	1,150	17,500	29·5	4 4-in.,	4 triple	106	308
Wadsworth	Bath I.W.	1915	315·3	29·9	10	..	1,060	17,000	30	4 4-in.	4 dbl.	118	310
Porter, Conyngham	Cramp	1916	315·3	29·9	10·1	..	1,090	18,000	29·5	4 4-in.	4 dbl.	106	308
Tucker	Fore River S.B. Co.	1916	315·3	29·9	10·4	..	1,090	18,000	29·5	4 4-in.	4 dbl.	106	309
Ericsson	N.Y. S.B. Co.	1915	305·3	30·6	10·7	..	1,090	16,000	29	4 4-in.	4 dbl.	106	305
Cushing	Fore River S.B. Co.	1915	305·3	30·4	10·5	..	1,090	16,000	29	4 4-in.	4 dbl.	106	308
McDougal	Bath I.W.	1914	305·3	30·6	9·7	..	1,020	16,000	29·5	4 4-in.	4 dbl.	106	311
Winslow, Nicholson, O'Brien		1915	305·3	30·3	10·5	..	1,050	16,000	29	4 4-in.	4 dbl.	106	307
Balch, Benham, Parker, Aylwin	Cramp.	1914, 1914, 1913, 1914	305·3	30·5	10·5	..	1,036	16,000	29·5	4 4-in.	4 dbl.	106	310
Duncan	Fore River S.B. Co.	1913	305·3	30·4	10	..	1,014	16,000	29	4 4-in.	4 dbl.	106	308
Downes	N.Y. S.B. Co.	1915	305·3	30·6	10	..	1,072	16,000	29	4 4-in.	4 dbl.	106	308
Cummings, Cassin	Bath I.W.	1913	305·3	30·4	9·8	..	1,020	16,000	29	4 4-in.	4 dbl.	106	312
Destroyers now fitted as Minelayers—													
Rizal, Sproston, Anthony, Burns	Union I.W.	1919, 1919, 1919, 1919								4 4-in., 1 14-pr. A.A. 92 mines			
Ludlow	Union I.W.	1918								3 4-in. 1 14-pr. A.A. 92 mines			
Ingraham, Hart	Union I.W.	1919, 1919								4 4-in., 1 14-pr. A.A. 92 mines			
Mahan	Fore River S.B. Co.	1918	314·4	31	9·8	..	1,191	27,000	35	3 4-in., 1 14-pr. A.A. 92 mines.	..	107	283
Lansdale, Maury, Luce, Israel	Fore River S.B. Co.	1918								4 4-in., 1 14-pr. A.A. 92 mines			
Murray	Fore River S.B. Co.	1918								3 4-in., 1 14-pr. A.A. 92 mines			
Stribling	Fore River S.B. Co.	1918								4 4-in., 1 14-pr. A.A. 92 mines			

In addition to the above there are 21 obsolete destroyers, completed 1910–1912. Their displacement is 742 tons, 29·5 knots, carrying 5 or 4 13-pdrs. and 3 double torpedo tubes. Their names are Mayrant, Henley, Jarvis, Beale, Fanning, Jenkins, Jouett, Patterson, Walke, Monaghan, Ammen, Trippe, Warrington, Burrows, McCall, Sterrett, Perkins, Drayton, Terry, Paulding, Roe. Twelve Destroyers have been authorized.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement. Surface / Submerged.	Indicated Horse-Power.	Maximum Speed. Surface / Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots				Tons.
SUBMARINES—													
V4	..	Bldg.	..	..	..	..	2,890	..	15 / 8	1 6-in., 60 mines	4	..	..
V5 .. .. V6	Portsmouth Navy Yard. Mare Island Navy Yard.	Bldg.	..	..	..	..	2,890	..	17 / —	..	..	..	..
V3 .. .. V2 .. .. V1	Portsmouth Navy Yard.	1926 1925 1924	341·5	27·5	15·5	..	2,160 / 2,520	6,500 / —	21 / 9	1 5-in. 2 maxim	6	87	..
S51 .. .. S50 .. .. S49 .. .. S48	Bridgeport	1922	240	21·8	13·5	..	990 / 1,230	1,800 / 1,500	14·8 / 11·0	1 4-in.	5	..	148
S47 .. .. S46 .. .. S45 .. .. S44 .. .. S43 .. .. S42	Quincy	1925 1925 1925 1925 1924 1924	225·3	20·7	16	..	906 / 1,126	1,200 / 1,500	14 / —	1 4-in.	4	40	154
S41 .. .. S40 .. .. S39 .. .. S38 .. .. S37 .. .. S36	San Francisco	1924 1923 1923 1923 1923 1923	219·3	20·7	16	..	854 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4	..	140
S35 .. .. S34 .. .. S33 .. .. S32 .. .. S31 .. .. S30	San Francisco	1923 1923 1923 1923 1923 1920	219·3	20·7	16	..	854 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4	38	140
S29 .. .. S28 .. .. S27 .. .. S26 .. .. S25 .. .. S24 .. .. S23 .. .. S22 .. .. S21 .. .. S20 .. .. S19 .. .. S18	Quincy	1924 1923 1924 1923 1923 1923 1923 1924 1923 1922 1921 1923	219·3	20·7	16	..	854 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4	38	140
S17 .. .. S16 .. .. S15 .. .. S14	Bridgeport	1921 1920 1921 1921	231	21·8	13	..	854 / 1,092	1,000 / 1,200	13·5 / 12·3	1 4-in.	4	38	123
S13 .. .. S12 .. .. S11 .. .. S10	Navy Yard, Portsmouth	1923 1923 1923 1922	231	21·8	13	..	876 / 1,092	2,000 / 1,200	15·8 / 12·3	1 4-in.	5	38	123
S9 .. .. S8 .. .. S7 .. .. S6 .. .. S4 .. .. S3		1921 1920 1920 1920 1919 1919	231	21·8	13	..	876 / 1,092	1,400 / 1,200	15 / 12·3	1 4-in.	4	38	123
S2	Lake T.B. Co.	1920	207	19·6	16·2	..	800 / 980	1,800 / 1,210	16 / 11	1 4-in.	4	38	88
S1	Quincy	1920	219·3	20·7	16	..	854 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4	38	140
T3 .. .. T2 .. .. T1	Fore River	1920 1922 1920	268·8	22·8	12·8	..	1,110 / 1,490	4,400 / 1,520	20 / 11·5	1 4-in.	6	..	76
R27 .. .. R26 .. .. R25 .. .. R24 .. .. R23 .. .. R22 .. .. R21	Bridgeport	1919	175	16·6	13·9	..	495 / 600	1,000 / 800	14 / 11	1 3-in.	4	30	60

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement. Surface. / Submerged.	Indicated Horse-Power.	Maximum Speed. Surface. / Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots				Tons.
SUBMARINES—*continued.*													
R20	E.B. Co. at Union I.W.	1918	186·1	18	14·5	..	570 / 680	880 / 934	13·5 / 10·5	1 3-in.	4	30	63
R19		1918											
R18		1918											
R17		1918											
R16		1918											
R15		1918											
R14		1919											
R13		1919											
R12, R11, R10, R9, R8, R7, R6, R5, R4, R3, R2, R1	Quincy	1919											
O16, O15, O14	Long Beach	1918	175	16·3	13·8	..	485 / 566	1,000 / 880	14 / 11	1 3-in.	4	30	62
O13, O12, O11	Bridgeport												
O10, O9, O8, O7, O6, O4, O3	Quincy	1918	172·3	18	14·4	..	520 / 630	880 / 740	14 / 10·5	1 3-in.	4	30	73
O2	Navy Yard, Puget Sound												
O1	Navy Yard, Portsmouth												
H9, H8, H7, H6, H5, H4	Navy Yard, Puget Sound	1918	150·3	15·8	12·4	..	358 / 434	480 / 600	12¾ / 10½	..	4	26	38
N3, N2, N1	Seattle	1917	147·3	15·8	12·5	..	348 / 414	480 / 560	13 / 11	..	4	26	20
L11, L9, L3, L2	Fore River	1916	168·5	17·4	13·6	..	450 / 550	900 / 680	14 / 10·5	1 3-in.	4	29	65
K8, K7	San Francisco	1914	153·5	16·7	13	..	392 / 520	480 / 680	14 / 10·5	..	4	26	57
K6, K5	F.R.S. Co.												
K4	Seattle												
K3	San Francisco												
K2, K1	F.R.S. Co.												
H3	Seattle	1914	150·3	15·8	12·4	..	358 / 434	480 / 600	14 / 10·5	..	4	26	32
H2	San Francisco	1913											

Three more V Class submarines and a submarine named Neff are authorized.
All submarines older than O1 are termed second-line submarines, suitable only for coast defence.

PLANS

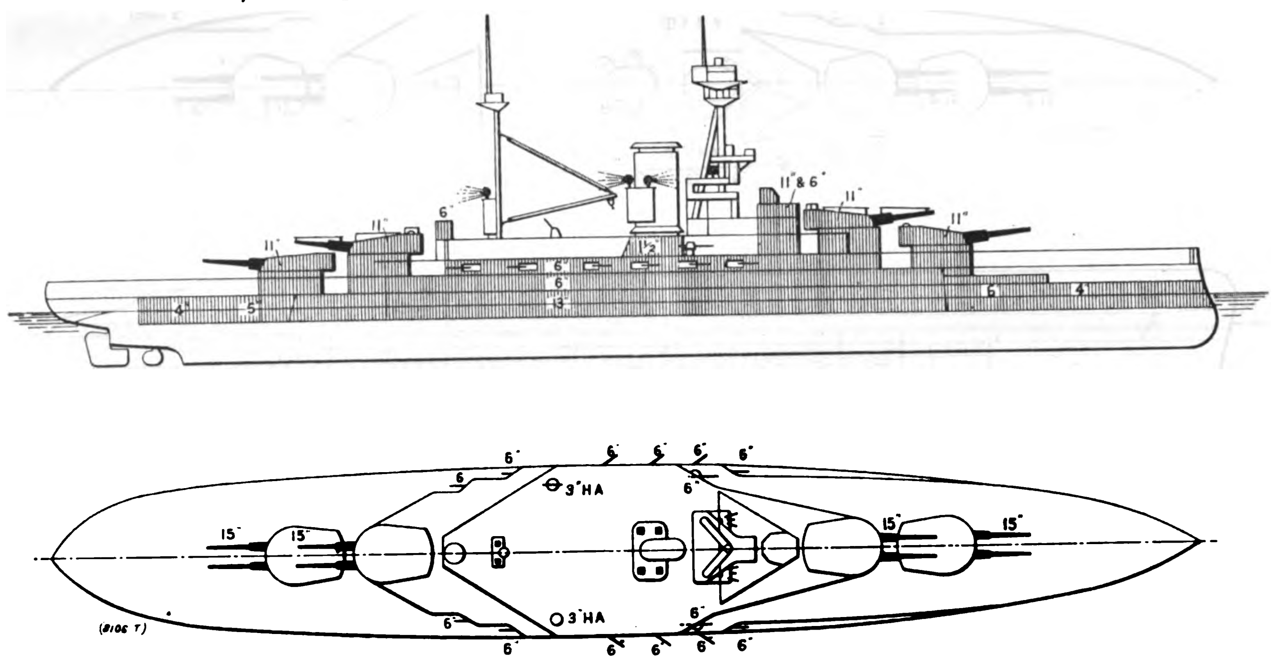
OF

BRITISH AND FOREIGN WARSHIPS.

GREAT BRITAIN.

BATTLESHIPS.

Royal Sovereign. Royal Oak. Revenge. Resolution. Ramillies.



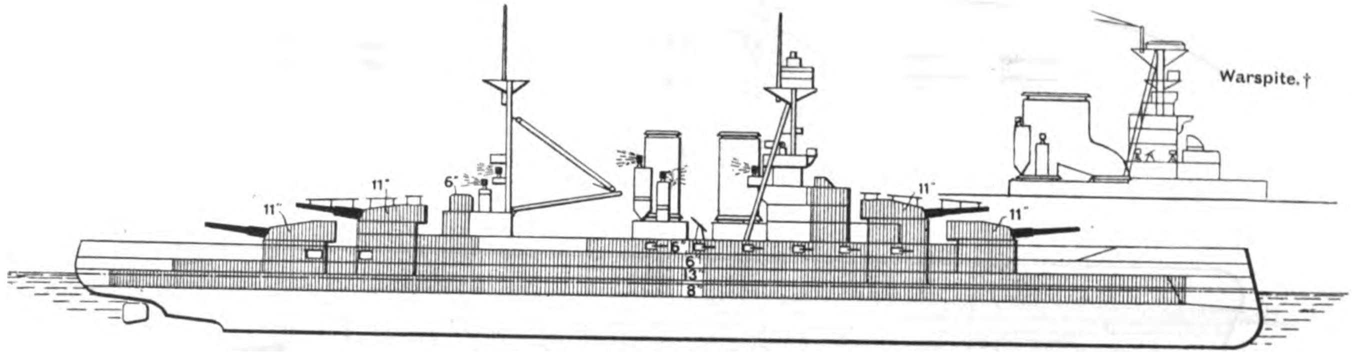
Length (extreme), 620 ft. 6 ins.* ; Length B.P., 580 ft. ; 25,750 tons ; Speed, 23 knots Completed, 1916-17.
Armament, 8—15 in. ; 14—6 in. ; 2—4-in. A.A. ; 4—3-pr. ; 5 M ; 10 L.
Searchlights on mainmast removed.

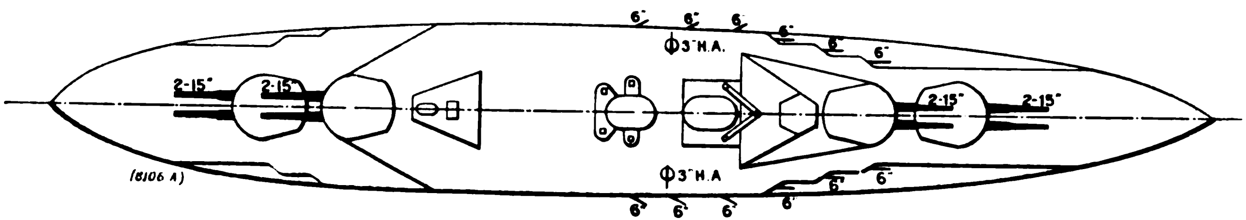
* Revenge, 624 ft. 6 in.

GREAT BRITAIN.

BATTLESHIPS.

Queen Elizabeth. Warspite. Barham. Valiant. Malaya





Length (extreme), 639 ft. 9 ins. *; Length B.P., 600 ft.; 27,500 tons; Speed, 25 knots; Completed, 1915-1916.
Armament, 8—15-in.; 12—6-in.; 4—4-in. A.A.; 4—3-pr.; 5 M.; 10 L.
Searchlights abaft mainmast removed.

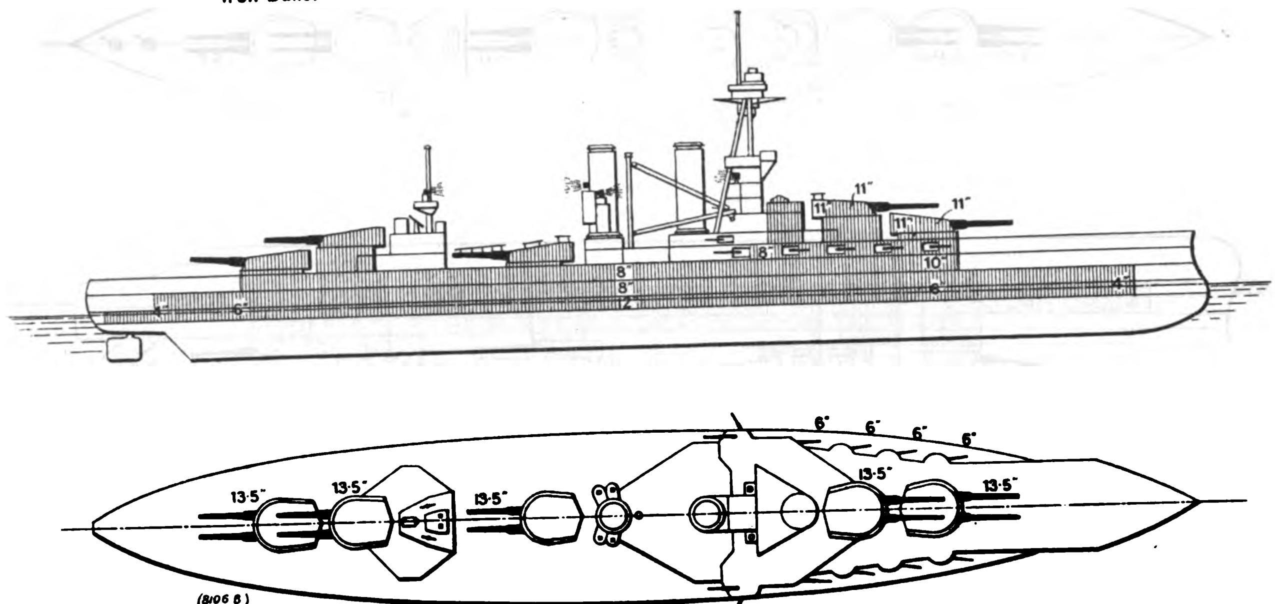
* Barham and Warspite, 643 ft. 9 ins. Malaya has 2—4-in. A.A.

† The other vessels of the class will be modified similarly in due course.

GREAT BRITAIN.

BATTLESHIPS.

Iron Duke. Marlborough. Benbow. Emperor of India.



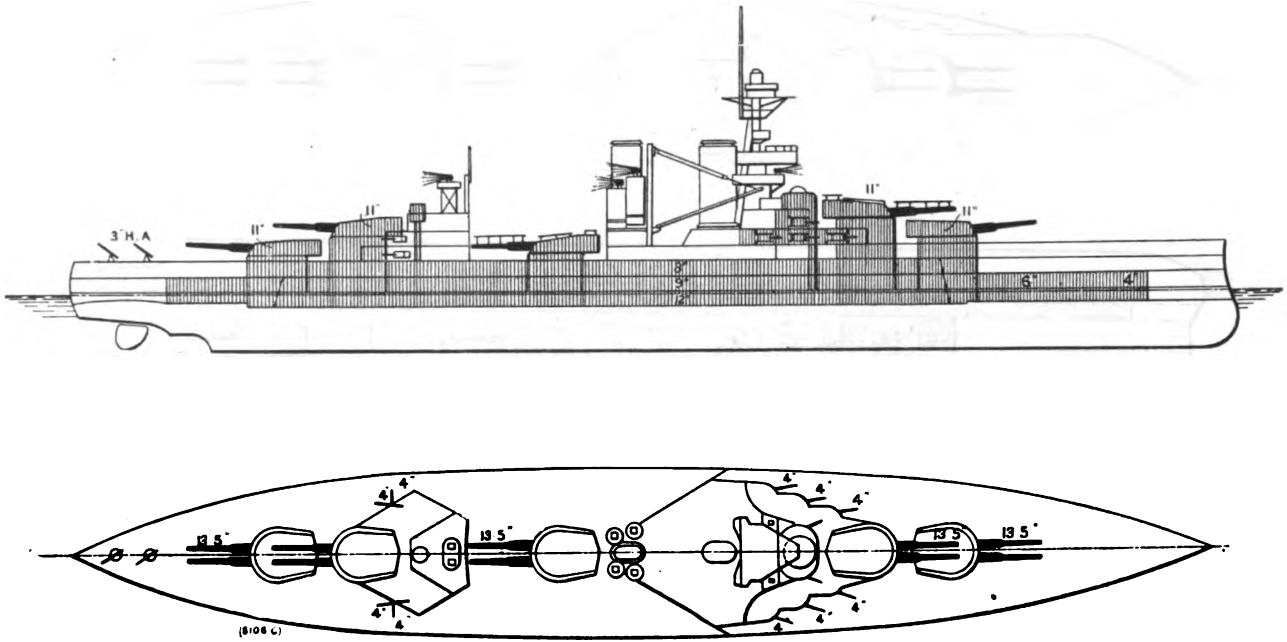
Length (extreme), 623 ft. 9 ins. *; Length B.P., 580 ft.; 25,000 tons; Speed, 21 knots; Completed, 1914.
Armament, 10—13·5-in.; 12—6-in.; 2—3-in. H.A.; 4—3-pr.; 5 M; 10 L.

* Marlborough, 623 ft.; Emperor of India, 622 ft. 9 ins.

GREAT BRITAIN.

BATTLESHIPS.

King George V.‡ Ajax.‡ Centurion.†



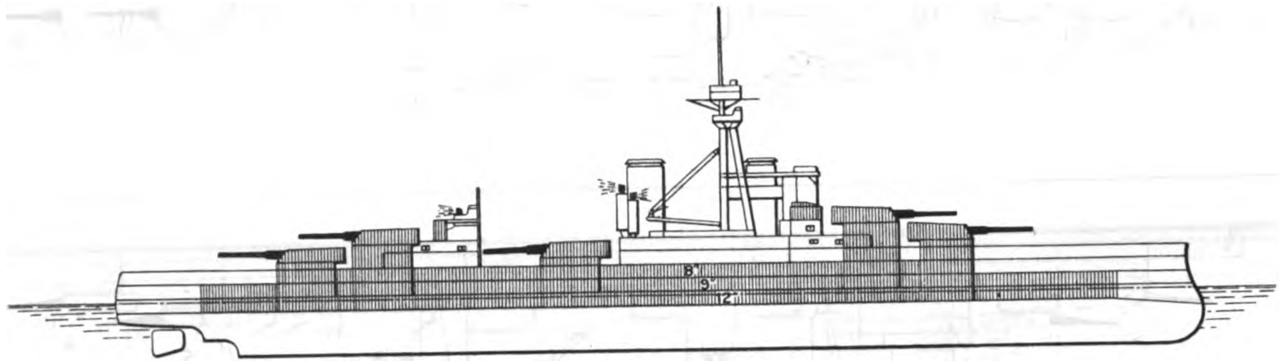
Length (extreme), 597 ft. 9 ins.* ; Length B.P., 555 ft. ; 23,000 tons ; Speed, 21 knots ; Completed, 1912-13.
Armament, 10—13·5-in. ; 12—4-in. ; 4—3-pr. ; 2—3-in. A.A. ; 5 M. ; 10 L.
These vessels are due to be scrapped on the completion of the Nelson and Rodney.

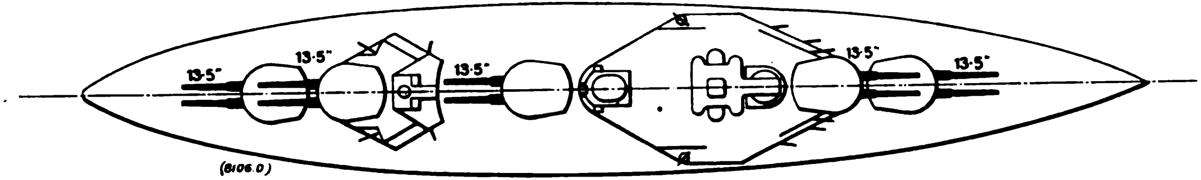
* King George V., 594 ft. 4 ins.
† Will be converted shortly into Fleet Target ship.
‡ Will shortly be placed on sale list.

GREAT BRITAIN.

BATTLESHIP.

Thunderer (Cadets Training Ship).





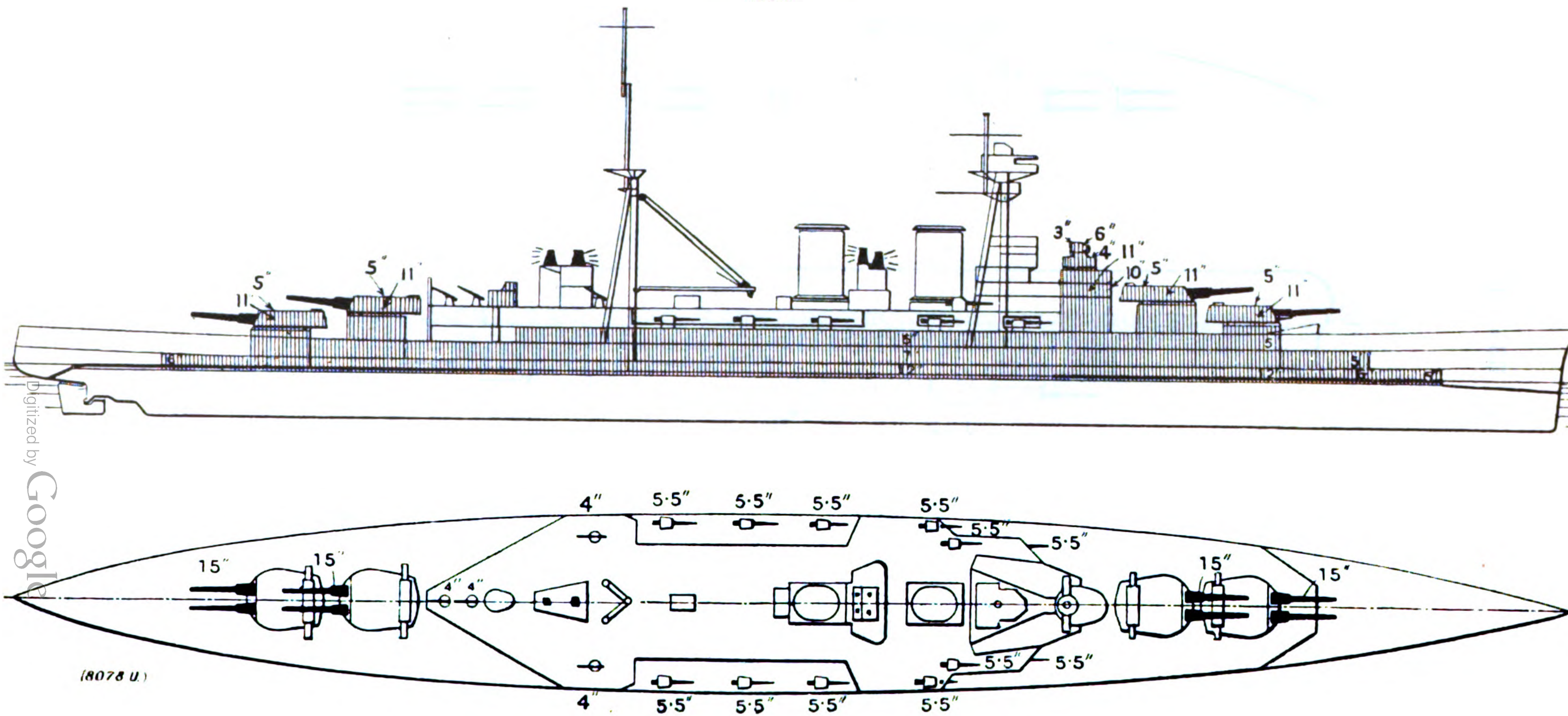
Length (extreme), 581 ft. 2 ins.; Length B.P., 545 ft.; 22,500 tons; Speed, 21 knots; Completed, 1912.
Armament, 10—13·5-in.; 8—4-in.; 1—3-in. A.A.; 4 3-pr.; 5 M.; 10 L.

Will shortly be placed on sale list.

GREAT BRITAIN.

BATTLE-CRUISER.

Hood.



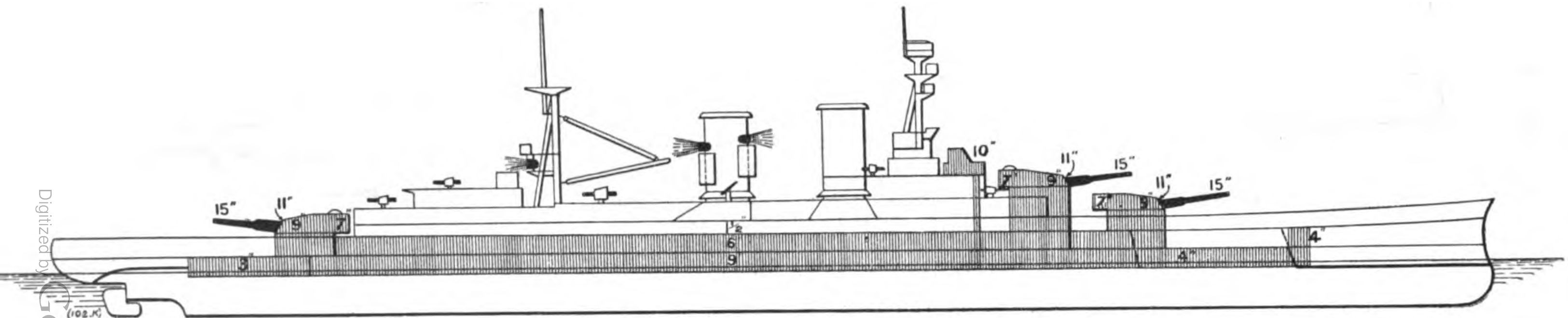
Length (extreme), 860 ft. 7 ins.; Length B.P., 810 ft.; 41,200 tons; Speed, 31* knots; Completed, 1920.
Armament, 8—15-in.; 12—5·5-in.; 4—4-in. A.A.; 4—3-pdr.

* Trials at 44,600 tons, 31·89 knots with 151,000 S.H.P.

GREAT BRITAIN.

BATTLE-CRUISERS.

Repulse. **Renown.**



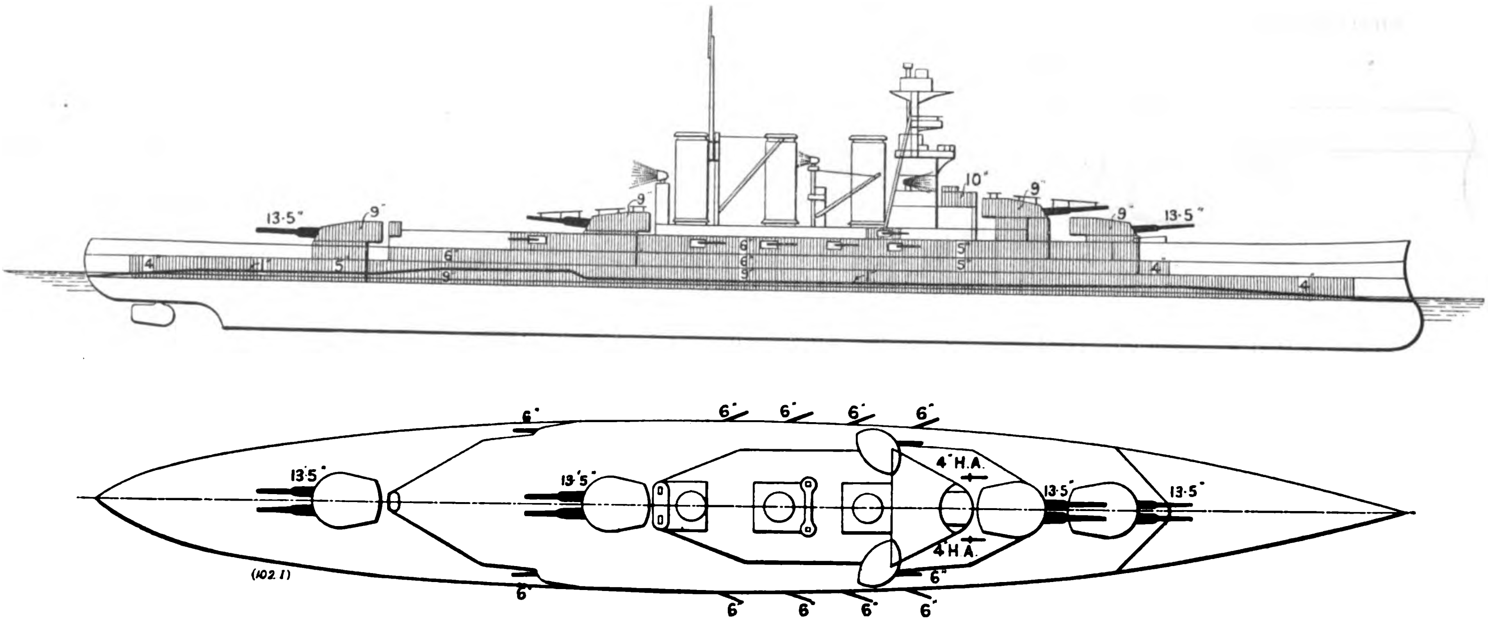
Length (extreme), 794 ft. 2 ins.; Length, B.P., 750 ft.; 26,500 tons; Speed, 31·5 knots; Completed, 1916.
Armament, 6—15-in.; 15—4-in.; 4—3-pr.; 4—4-in. A.A.; 5 M.; 10 L.

NOTE.—Repulse originally had a 6-in. main belt, but was re-armoured in 1920–21. Re-armouring of the Renown is allowed for by Chapter II., Part 3, Section (*d*) 2, of the Treaty of Washington, and was completed during 1926.

GREAT BRITAIN.

BATTLE-CRUISER.

Tiger.

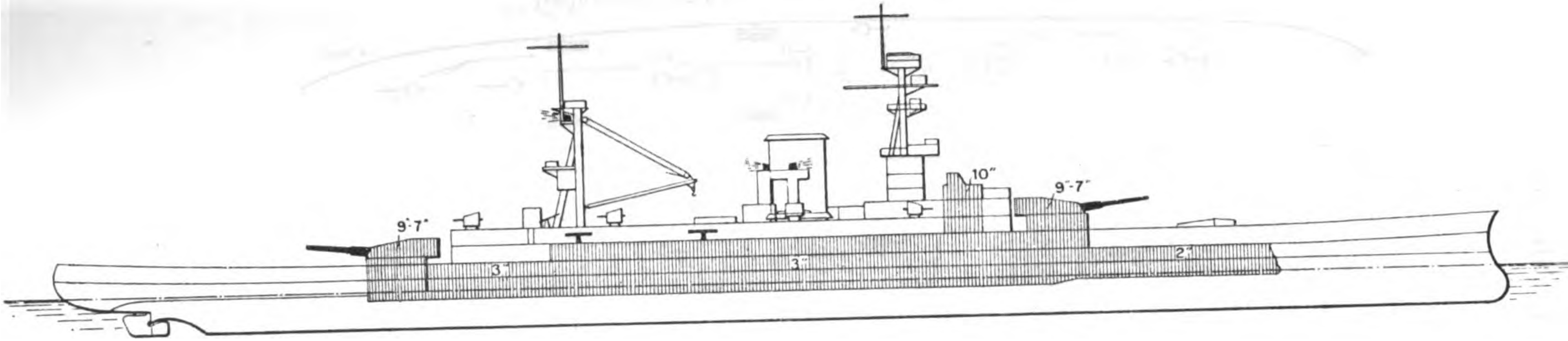


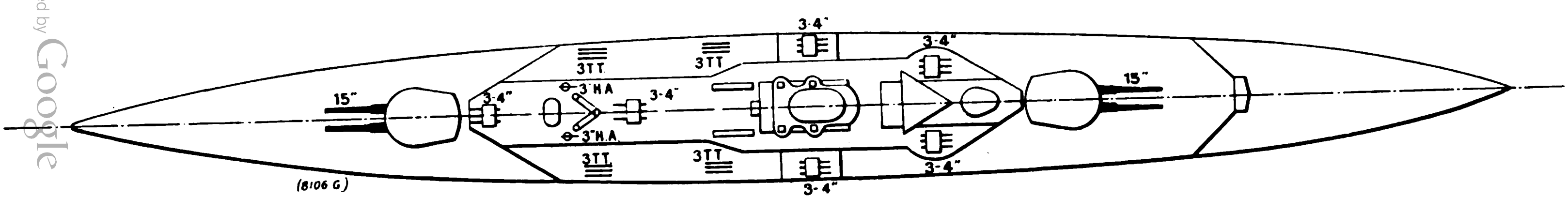
Length (extreme), 704 ft. ; Length B.P., 660 ft. ; 28,500 tons ; Speed, 30 knots ; Completed, 1914.
Armament, 8—13·5-in. ; 12—6-in. ; 4—3-pr. ; 4—4-in. A.A. ; 5 M. ; 10 L.

GREAT BRITAIN.

LARGE LIGHT CRUISERS.

Courageous. **Glorious.**





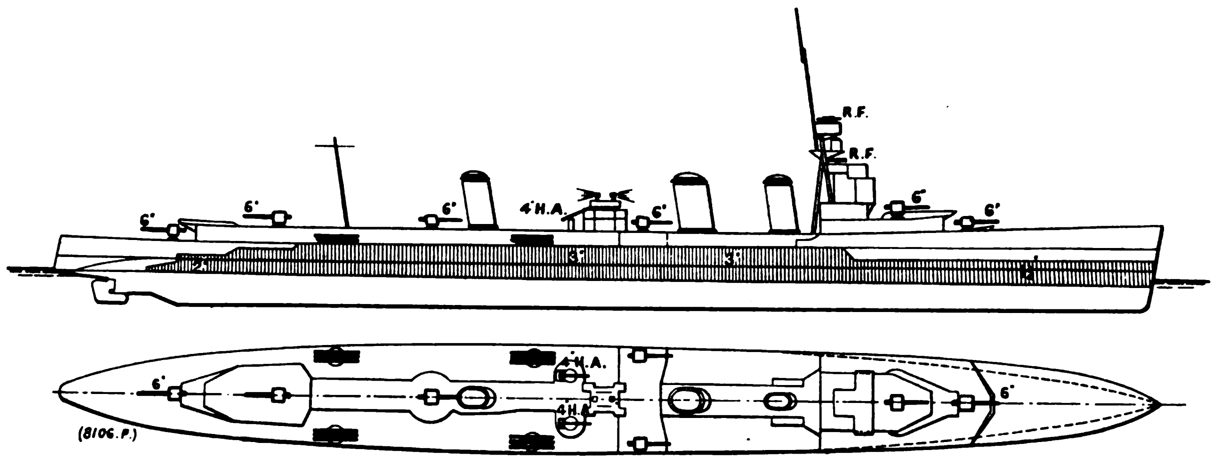
Length (extreme), 786 ft. 3 ins.; Length B.P., 735 ft.; 18,600 tons; Speed, 31 knots; Completed, 1917. Armament, 4—15-in.; 18—4-in.; 2—3-in. A.A.; 4—3-pr.; 5 M.; 10 L.

NOTE.—These vessels are being reconstructed as Aircraft Carriers.

GREAT BRITAIN.

LIGHT CRUISERS.

Emerald. **Enterprise.**

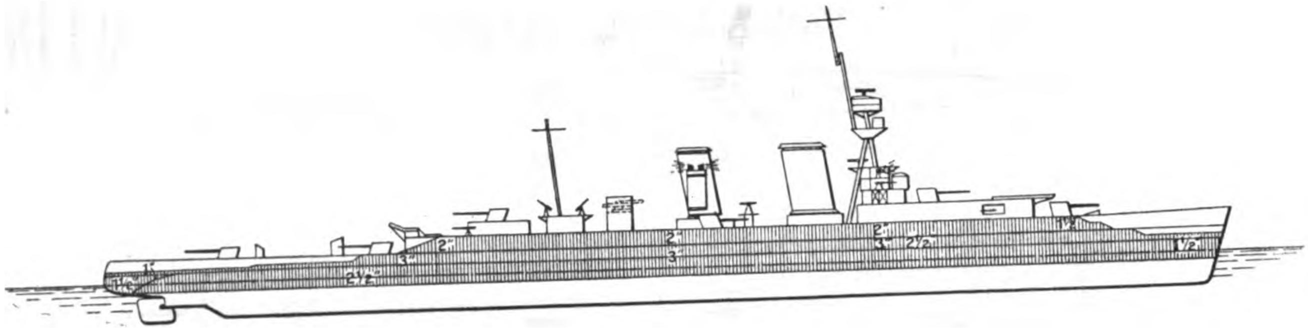


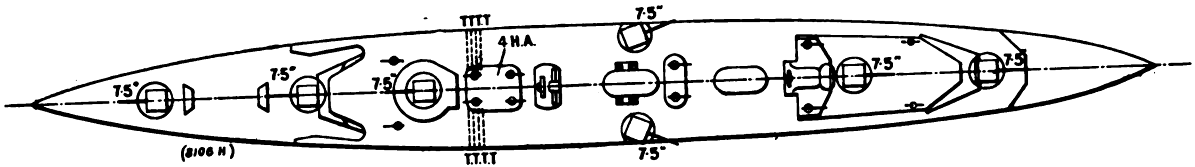
Length (extreme), 570 ft.; Length B.P., 535 ft.; 7,550 tons; Speed, 33 knots.
Armament, 7—6-in.; 3—4-in. A.A.; 4—3-pr.; 2—2-pr. Pom Pom.; 1 M.

GREAT BRITAIN.

LIGHT CRUISERS.

Effingham. **Hawkins.** **Frobisher.** **Vindictive.***





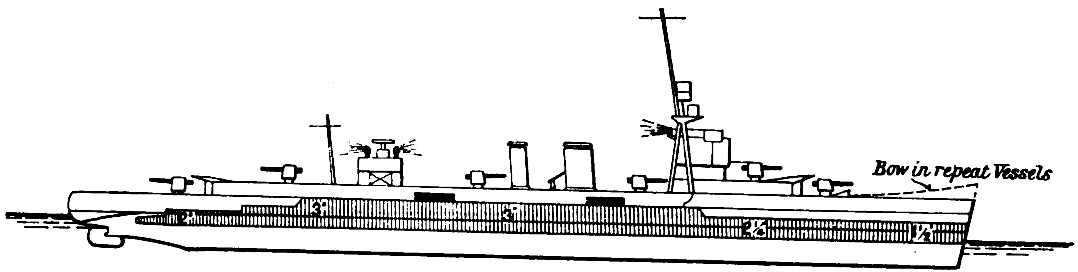
Length (extreme), 605 ft.; Length B.P., 565 ft.; 9,750 tons; Speed, 30 knots.
Armament, 7—7·5-in.; 3—4-in. A.A.; 4—3-pr.; 2 M.; 8 L.
Hawkins has 4—4-in. A.A. and two 2-pr. Pom Poms.

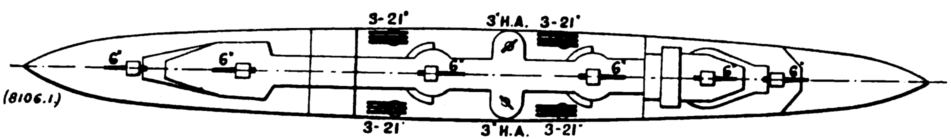
* Vindictive has a catapult mounted forward of the bridge, and for this the raised 7·5 in. gun forward has been removed.

GREAT BRITAIN.

LIGHT CRUISERS. D CLASS.

Despatch.* **Diomede.*** **Danae.** **Dauntless.** **Dragon.** **Delhi.*** **Dunedin.*** **Durban.***





(8106.1)

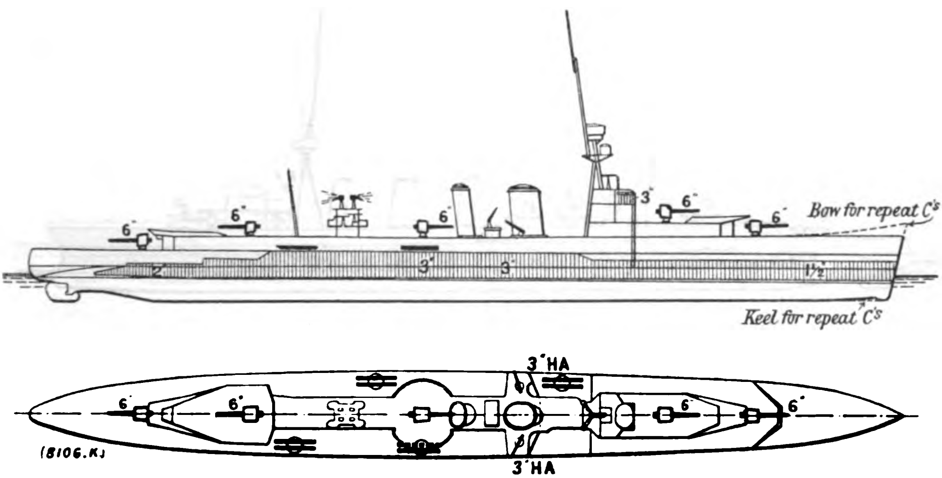
Length, 445 ft.; 4,650 tons†; Speed, 29 knots;
Armament, 6—6-in.; 3—4-in. A.A.; 4—3-pr.; 2 M.; 8 L.

* Repeat vessels.
† Despatch and Diomede are 4,765 tons.
Diomede and Dunedin are now attached to the New Zealand Division.

GREAT BRITAIN.

LIGHT CRUISERS.

Ceres.!   Curacoa.   Curlew.   Cardiff.   *Coventry.
*Cairo.   *Cape Town.   *Carlisle.   *Colombo.   Calcutta.

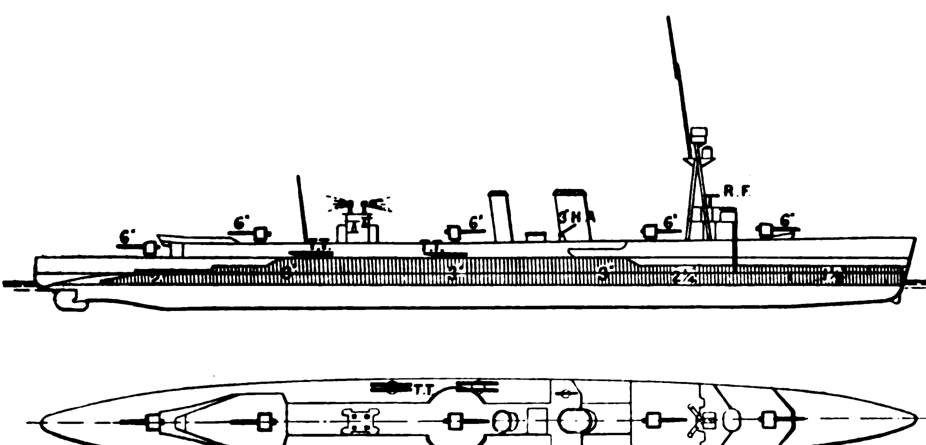


Length (extreme), 450 ft. (451 ft. 6 ins. Repeat Vessels); Length B.P., 425 ft.; 4,190 tons; Speed, 29 knots; Completed, 1917-18 (Repeat Vessels, 1918-22).
Armament, 5—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 4 above-water D.R. torpedo tubes. Cardiff and Ceres have 2—3-pr.

*** Repeat vessels.**

LIGHT CRUISERS.

Caledon.   Calypso.   Caradoc.
*Centaur.   Concord.



*** These Plans apply to the above-named ships, but there are differences in detail, as stated.**

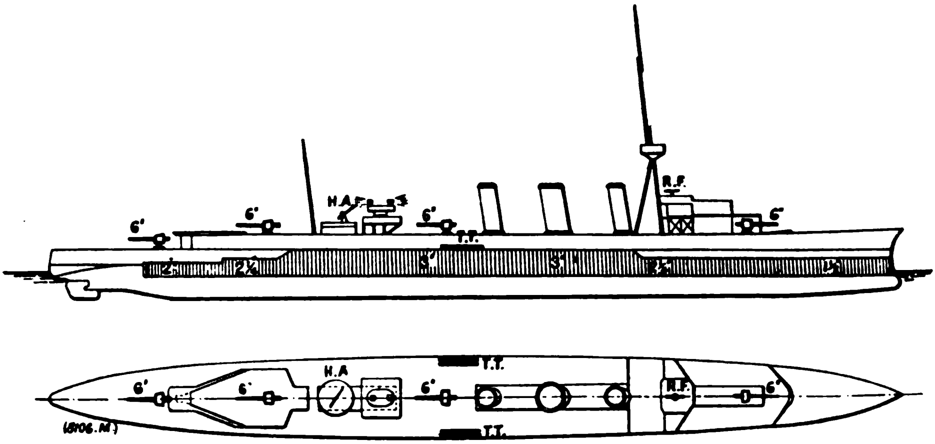
Caledon, Calypso, Caradoc } Length (extreme), 450 ft.; Length B.P., 425 ft.; 4120 tons; Speed, 29 knots; Completed, 1917. Armament, 5—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 2 M.; 8 L.; and 4 above-water D.R. torpedo tubes.

Centaur, Concord } Length (extreme), 446 ft.; Length B.P., 420 ft.; 3,750 tons; Speed, 29 knots; Completed, 1916. Armament, 5—6-in. (Centaur 4—6-in.); 2—3-in. H.A.; 2—3-pr.; 2—2-pr. Pom Poms; 2 M.; 4 L.; and 2 submerged torpedo tubes.

GREAT BRITAIN.

LIGHT CRUISERS.

Conquest. Carysfort. Cleopatra. Comus.

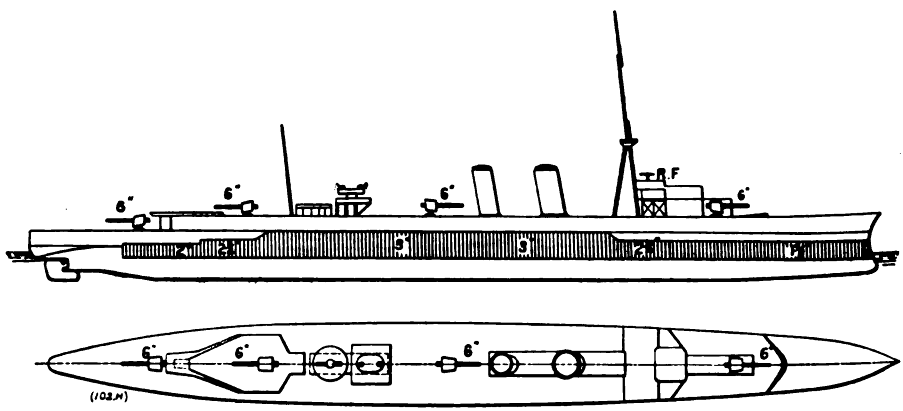


Conquest
Carysfort
Cleopatra
Comus

Length (extreme), 446 ft.; Length B.P., 420 ft.; 3,750 tons; Speed, 29 knots; Completed, 1915.
Armament, 4—6-in. (Conquest 3—6-in.); 2—3-in. A.A.; 2—2-pr. Pom Poms; 1 M.; 8 L.; 2 above-water D.R. torpedo tubes. (Comus, Carysfort, and Cleopatra have 4—3-pr.)

LIGHT CRUISERS.

Cambrian. Canterbury. Constance. Castor. Champion. Calliope.



Length (extreme), 446 ft.; Length B.P., 420 ft.; 3,750 tons; Speed, 29 knots; Completed, 1915.

Cambrian
Canterbury
Constance
Castor

Armament, 4—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 1 M.; 8 L.; 2 submerged torpedo tubes. (Canterbury has no 3-prs.)

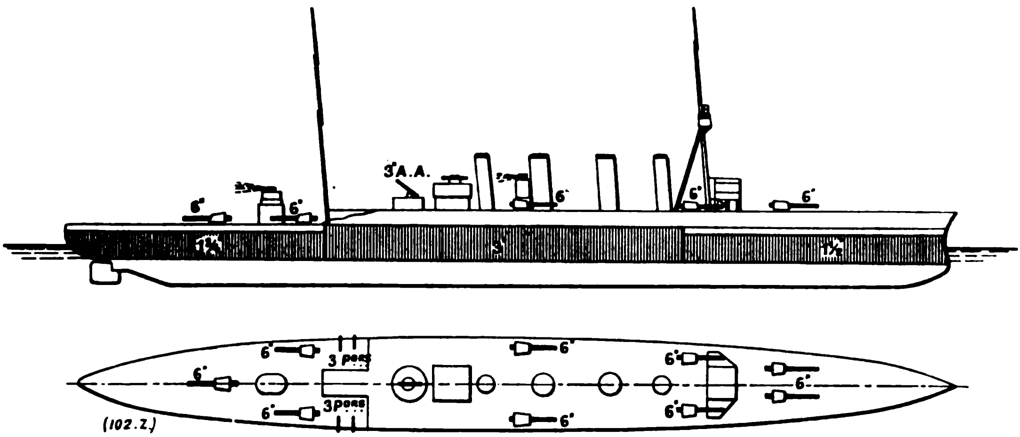
Champion Armament, 4—6-in.; 1—3-in. A.A.; 2—2-pr. Pom Poms; 1 M.; 8 L.; 2 submerged torpedo tubes; 2 above-water torpedo tubes.

Calliope Armament, 4—6-in.; 2—3-in. A.A.; 4—3-pr. 2—2-pr. Pom Poms; 1 M.; 8 L.; 2 submerged torpedo tubes.

GREAT BRITAIN.

LIGHT CRUISERS.

Birmingham. Lowestoft.

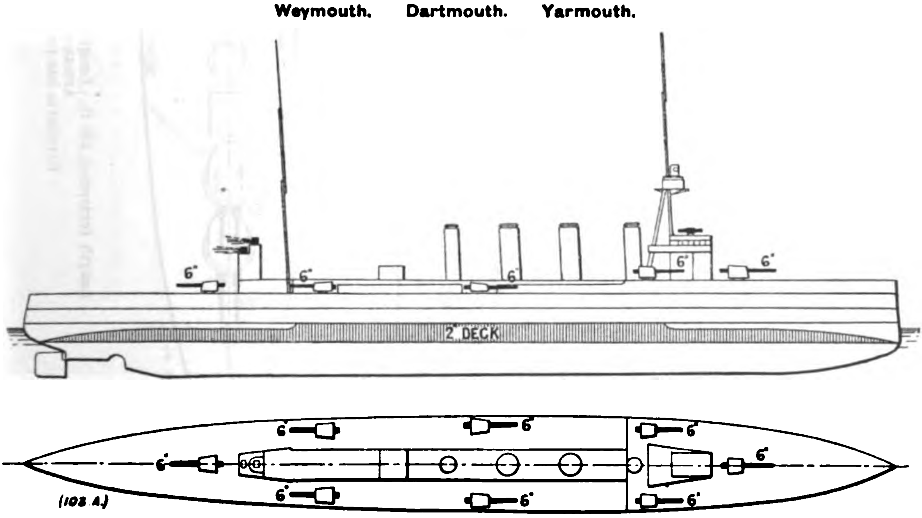


Length (extreme), 457 ft.; Length B.P., 430 ft.; 5,440 tons; Speed, 25½ knots; Completed, 1914.

Birmingham, Lowestoft } Armament, 9—6-in.; 1—3-in. A.A.; 4—3-pr.; 1—2-pr. Pom Pom; 2 M.; 8 L.; 2 submerged torpedo tubes.

LIGHT CRUISERS.

Weymouth. Dartmouth. Yarmouth.

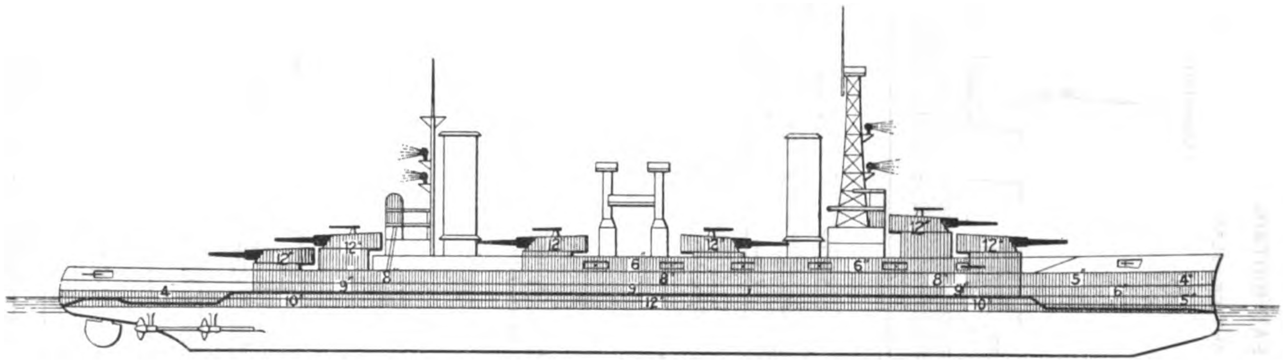


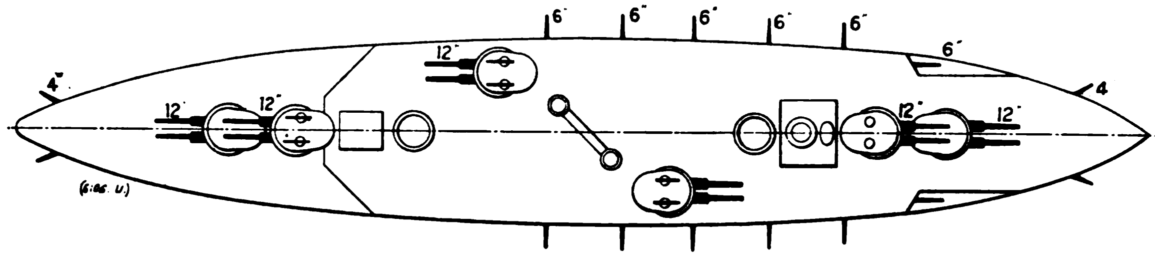
Length (extreme), 453 ft.; Length B.P., 430 ft.; 5,250 tons; Speed, 25½ knots; Completed, 1911-12.
Armament, 8—6-in.; 1—3-in. A.A.; 4—3-pr.; 2 M.; 8 L.; 2 submerged torpedo tubes.

ARGENTINE.

BATTLESHIPS.

Moreno. Rivadavia.



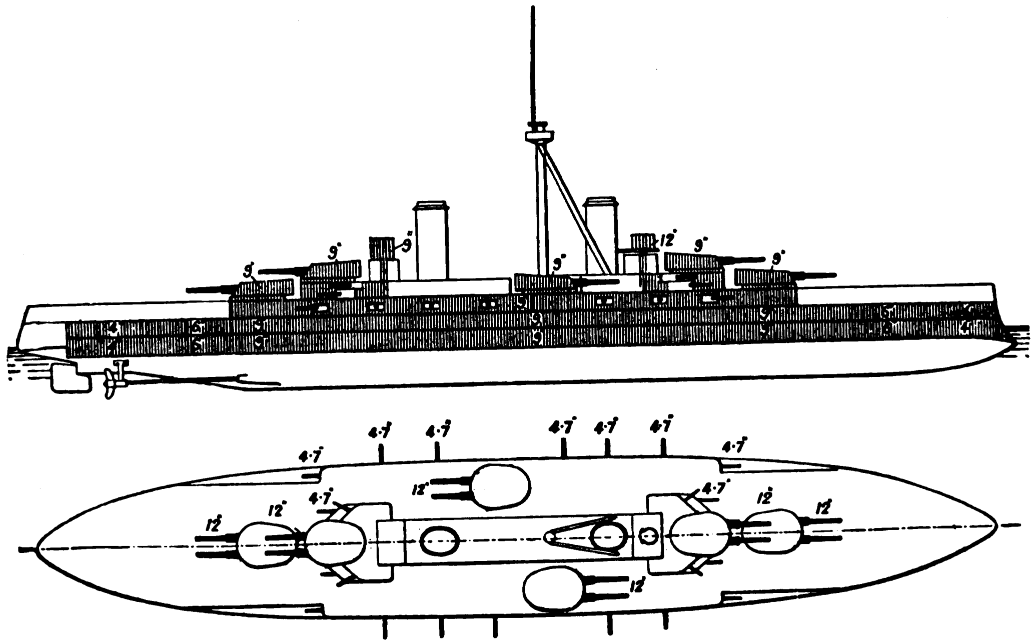


Length (extreme), 585 ft.; Length on W.L., 575 ft.; 27,940 tons; Speed, 22 knots; Completed, 1914–15.
Armament, 12—12-in.; 12—6-in.; 16—4-in.; 8 smaller.
Rivadavia has recently been fitted with tripod in lieu of lattice mast.

BRAZIL.

BATTLESHIPS.

Minas Geraes. São Paulo.

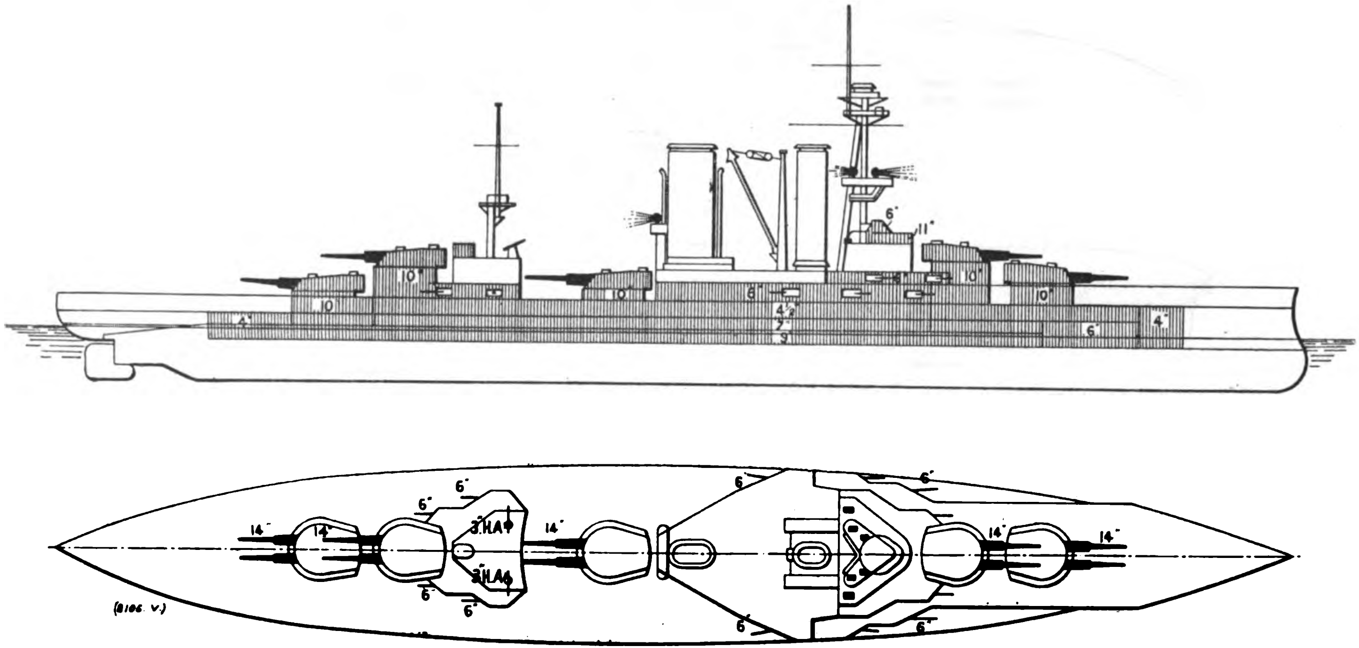


Length (extreme), 543 ft. ; Length B.P., 500 ft. ; 19,281 tons ; Speed, 21·5 knots ; Completed, 1909, 1910.
Armament, 12—12-in. ; 22—4·7-in. ; 8—3-pr. ; 2—3-in. A.A.
Overhauled and refitted at Brooklyn Navy Yard, 1921-22, and A.A. guns installed.

CHILE.

BATTLESHIP.

Almirante Latorre (*formerly* H.M.S. Canada).

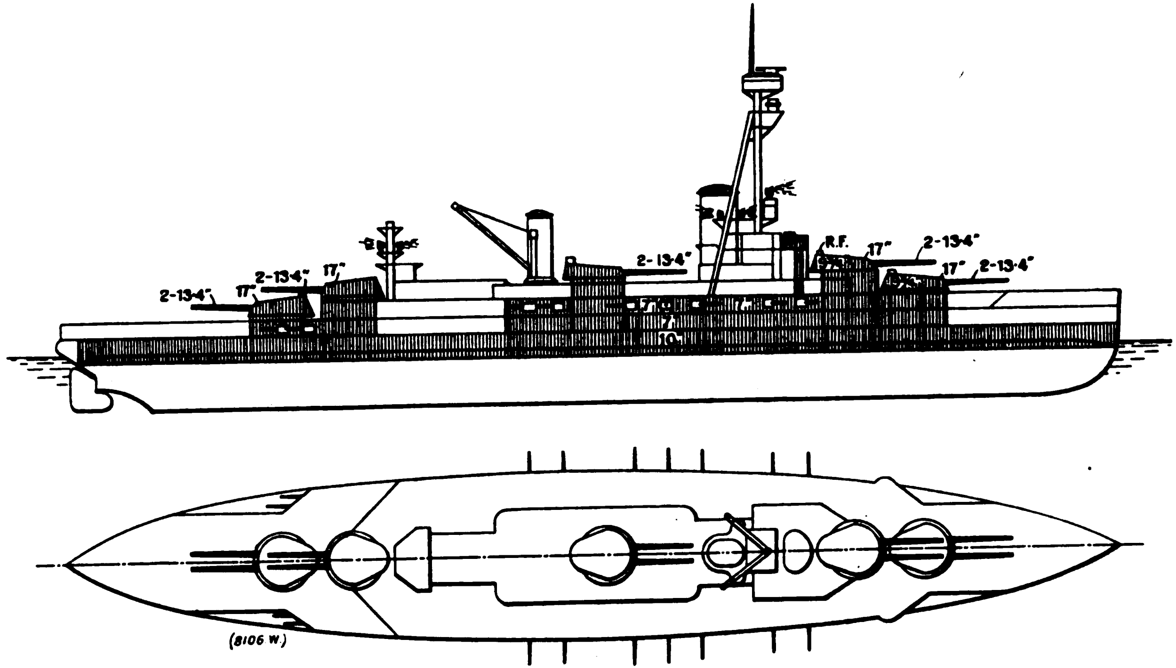


Length (extreme), 661 ft. ; Length B.P., 625 ft. ; 28,000 tons ; Speed, 23 knots ; Completed, 1915.
Armament, 10—14-in. ; 14—6-in. ; 2—3-in. ; and smaller.

FRANCE.

BATTLESHIPS.

Bretagne. Lorraine. Provence.



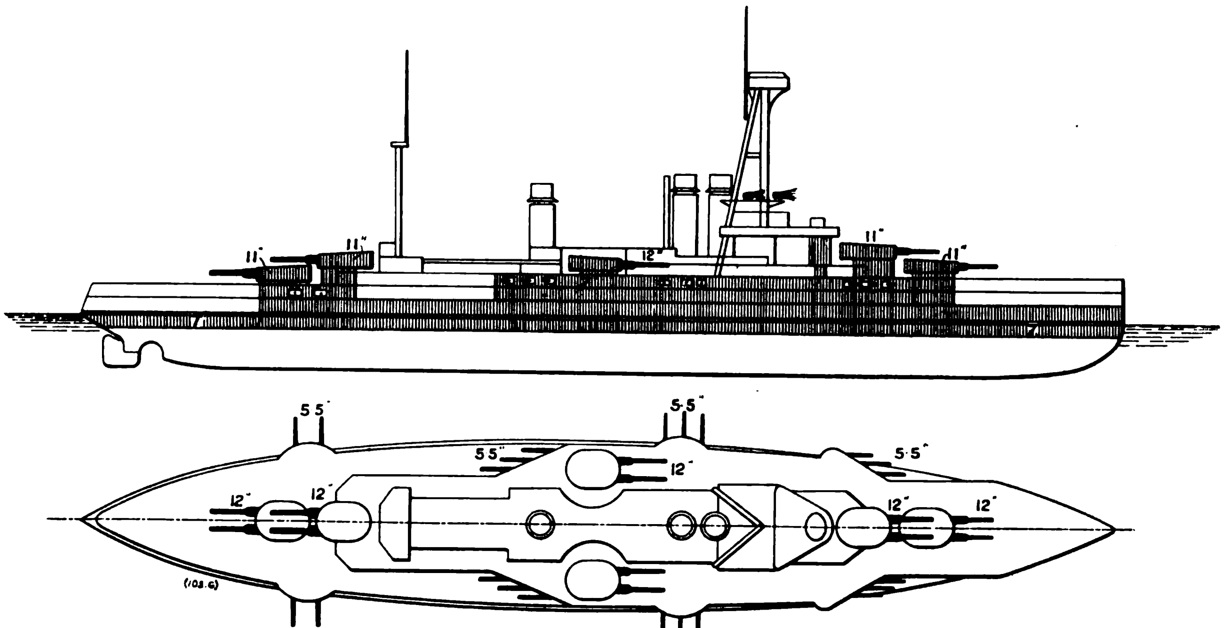
Length (extreme), 544 ft. 6 ins.; 23,177 tons; Speed, 20 knots; Completed, 1915–16; Reconstructed, 1919–20. Armament, 10—13·4-in.; 18—5·5-in.; 4—14-pr. A.A.; 5—3-pr.; 2—1-pr. Bretagne carries no 3-pr.

NOTE.—Bretagne as above, Provence and Lorraine have a main topmast rigged.

FRANCE.

BATTLESHIPS.

Jean Bart. Courbet. Paris.



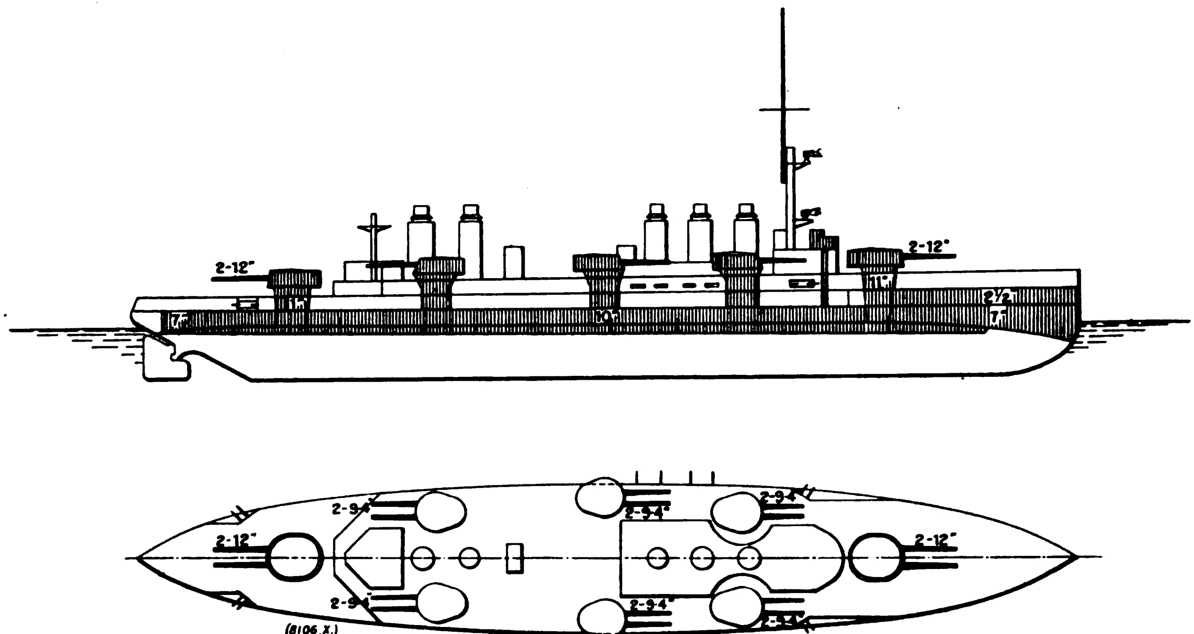
Length (extreme), 544 ft. ; Length B.P., 541 ft. 4 ins. ; 23,500 tons ; Speed, 20 knots ; Completed, 1913–14. Large alterations, 1924. Armament, 12—12-in. ; 22—5·5-in. ; 4—3-pr. ; 4—14-pr. A.A. ; 2—3-pr. ; 2—1-pr. (Courbet has 3—3-pr.)

NOTE.—Courbet and Jean Bart have only one large funnel forward instead of the two smaller ones in Paris

FRANCE.

BATTLESHIPS.

Condorcet. **Diderot.** **Voltaire.**

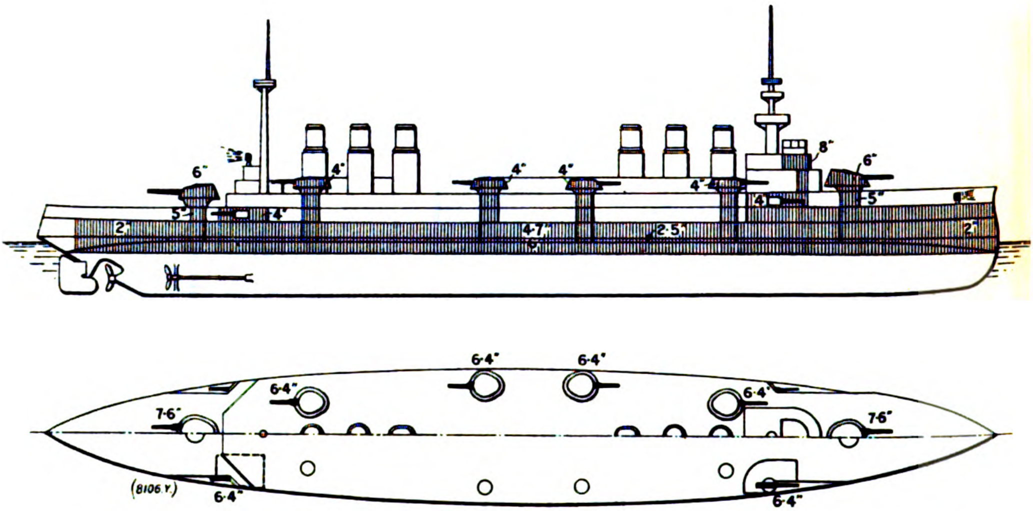


Length (extreme), 481 ft. ; Length W.L., 475 ft. 9 ins. ; Speed, 19¼ knots ; 18,600 tons ; Completed, 1911.
Armament, 4—12·in. ; 12—9·4·in. ; 14—14·pr. (2 A.A.) ; 4—3·pr. ; 2—1·pr.

FRANCE.

ARMOURED CRUISERS.

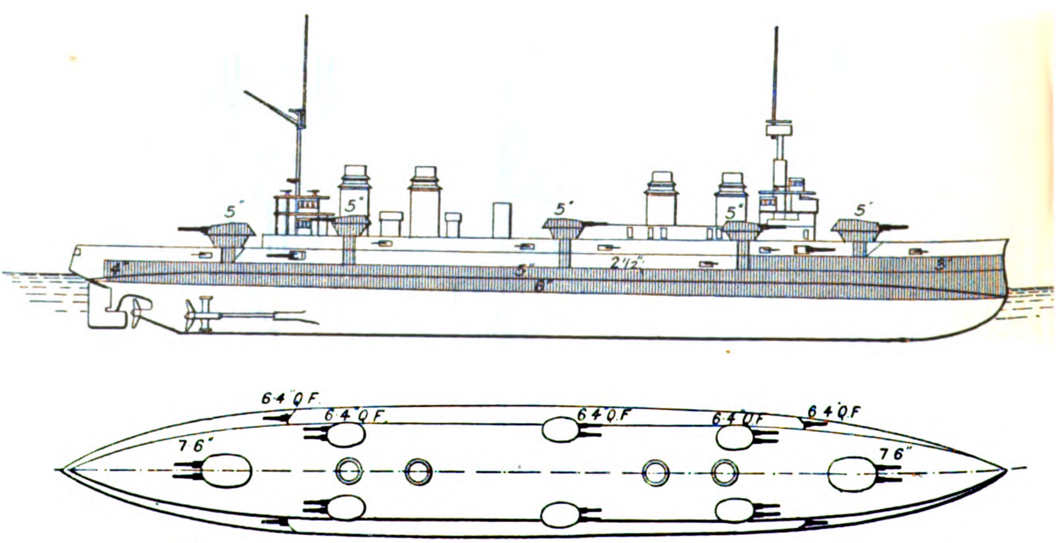
Ernest Renan. Jules Michelet.



Length, 515 ft. and 489 ft. ; 13,500 tons and 13,100 tons ; Speed, 23 knots and 22 knots ; Completed, 1909 and 1908 ; Armament, 4—7·6-in., 12—6·5-in. ; and smaller.

ARMOURED CRUISERS.

Jules Ferry. Victor Hugo.

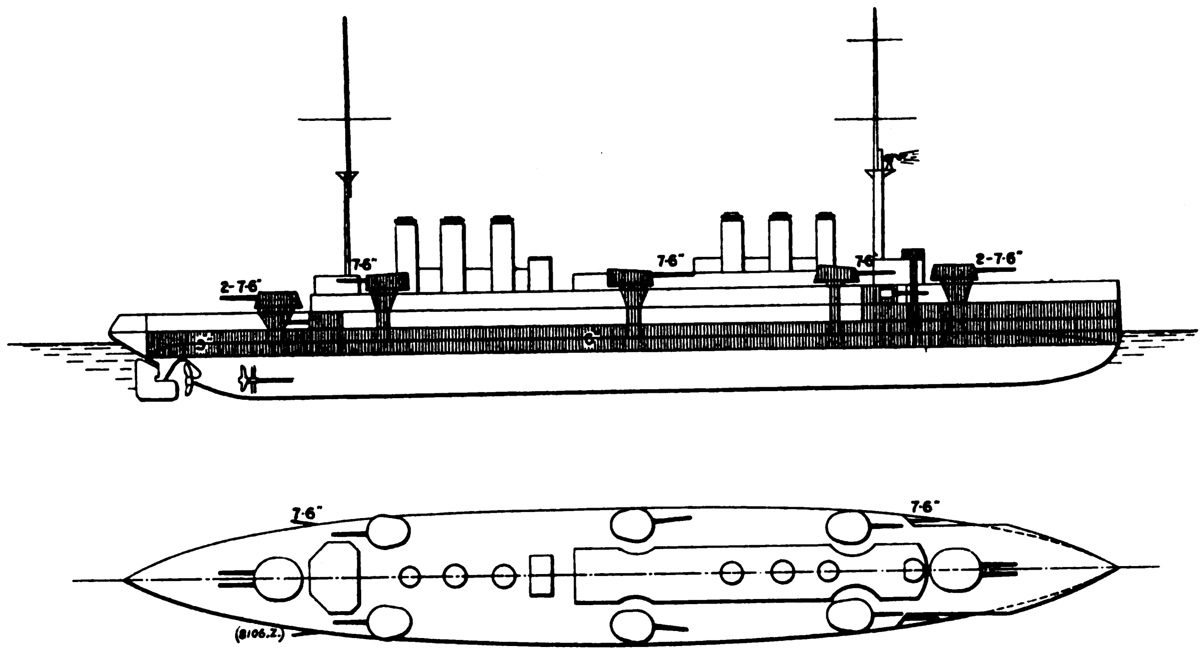


Length, 487 ft. and 480 ft. 6-ins. ; 12,351 and 13,108 tons ; Speed, 22 knots ; Completed, 1906–1907.
Armament, 4—7·6-in., 16 *—6·5-in. ; 24 smaller.
* Jules Ferry has 14—6·5-in.

FRANCE.

ARMOURED CRUISERS.

Edgar Quinet. **Waldeck Rousseau.**

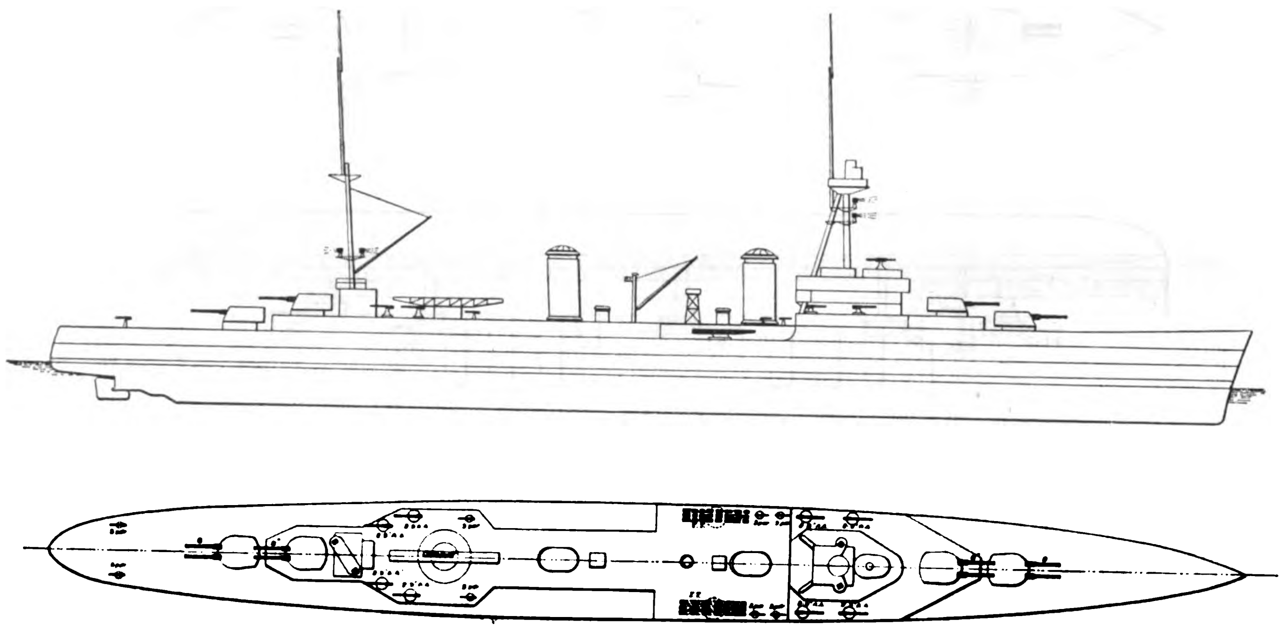


Length (extreme) 521 ft. 4 ins.; Length W.L., 515 ft.; Speed, 23 knots; 13,990 tons; Completed, 1911.
Armament, 14—7·6-in.; 10—9-pr.; and smaller.

FRANCE.

CRUISERS.

Duquesne. Tourville

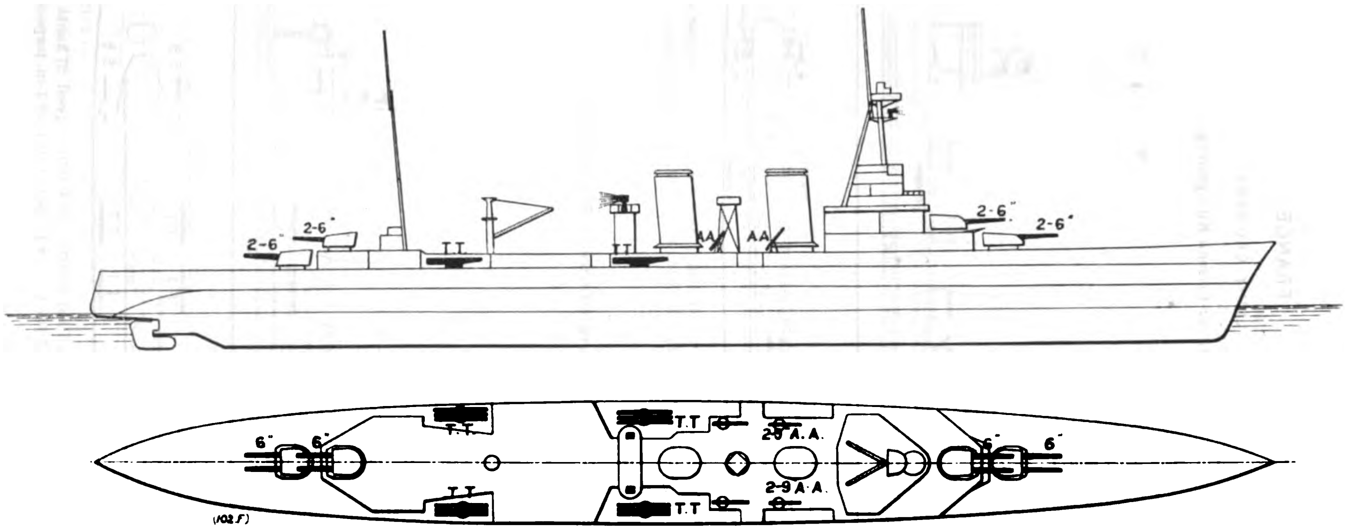


Length (extreme), 640 ft. ; Length B P., 607 ft. ; 10,000 tons ; Speed, 34-35 knots. Probable date of completion, early in 1927.
Armament, 8—8-in., 8—2·9-in. A.A. ; 8—3-pr. ; 2—triple T.T.'s. Fitted with a catapult. Carries 2 seaplanes.

FRANCE.

LIGHT CRUISERS.

La Motte Piquet. Duguay-Trouin. Primauguet.



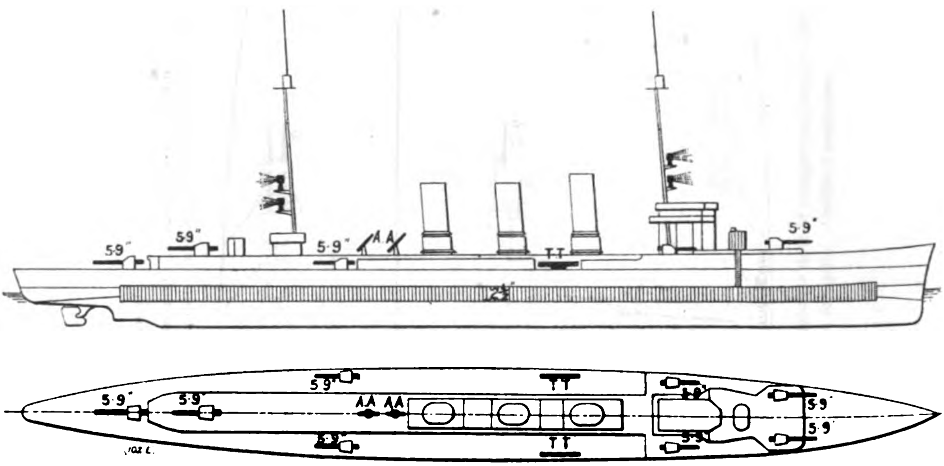
Length (extreme), 610 ft.; Length B.P., 575 ft.; 8,000 tons; Speed, 34 knots. First two ships of class laid down in August, 1922, and January, 1923. Completed 1926. Armament, 8—6-in.; 4—2·9 in. A.A.; 4 triple torpedo tubes (21·7-in. torpedoes) and 1-reconnaissance seaplane.

NOTE.—Reported to have protection to magazines.

FRANCE.

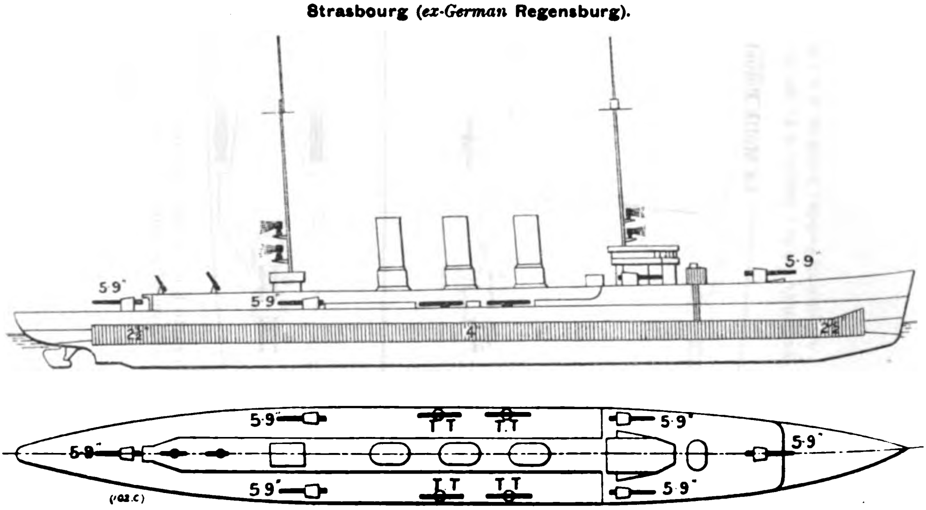
LIGHT CRUISERS.

Metz (*ex-German* Königsberg).



Length (water-line), 489 ft.; 5,300 tons; Speed, 27·5 knots; Completed, 1916.
Armament, 8—5·9-in.; 2—14-pr. A.A.; 4 M. 2 torpedo tubes.

Strasbourg (*ex-German* Regensburg).

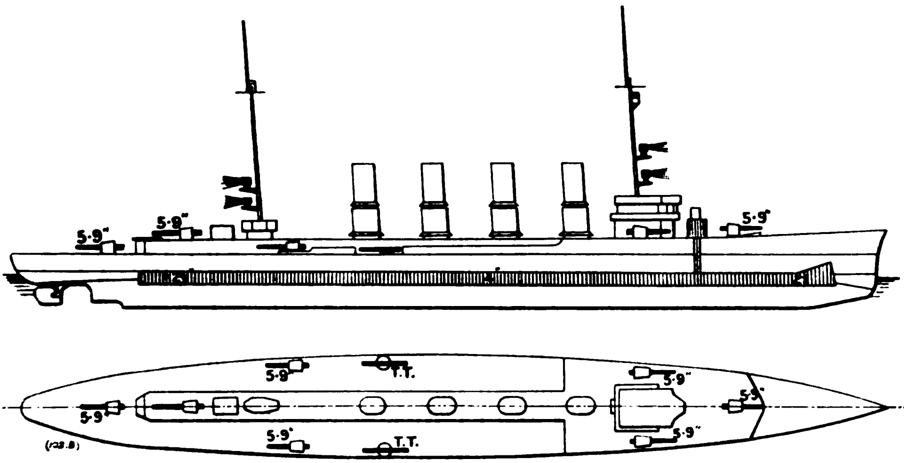


Length (extreme), 468 ft.; Length (water-line), 456 ft.; 4,900 tons; Speed, 27 knots; Completed, 1914.
Armament, 6—5·9-in.; 2—14-pr. A.A.; 4 torpedo tubes (19·7-in. torpedoes).

FRANCE.

LIGHT CRUISER.

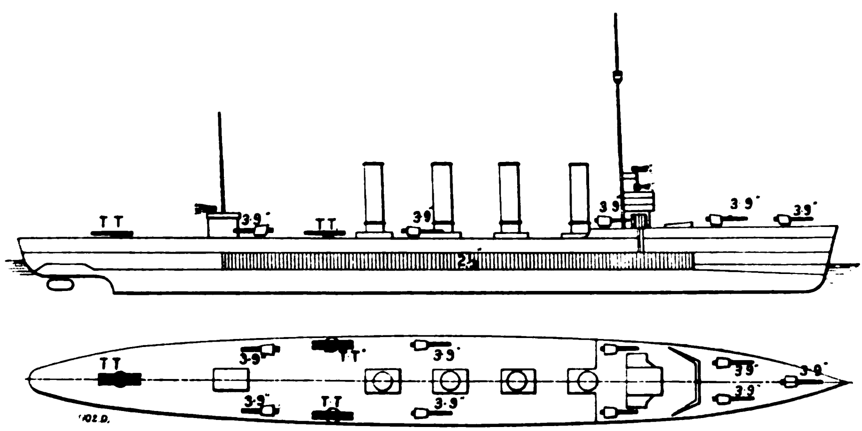
Mulhouse (*ex-German* Stralsund).



Length (water-line), 446 ft. 3 ins. ; 4,480 tons ; Speed, 28·27 knots ; Completed, 1913. Armament, 7—5·9-in. ; 2—14-pr. A.A. ; 2 M. ; 2 torpedo tubes (19·7-in. torpedoes).

LIGHT CRUISER.

Thionville (*ex-Austrian* Novara).

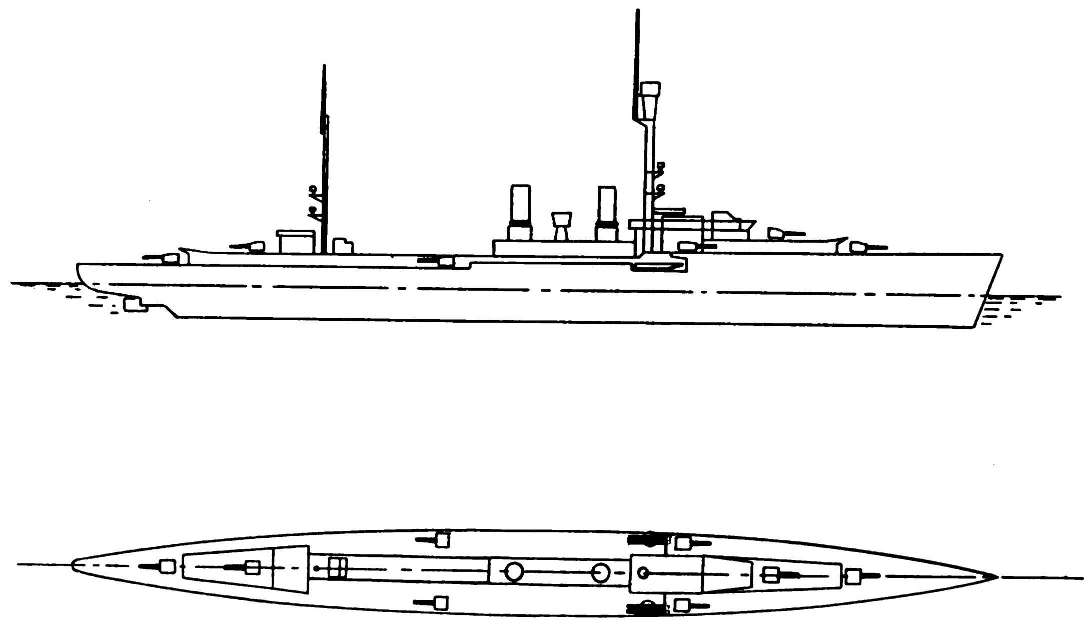


Length (extreme), 428 ft. 6 ins. ; Length (water-line), 410 ft. 9 ins. ; 3,500 tons ; Speed, 27 knots ; Completed, 1914. Armament, 9—3·9 in. ; 1—14 pr. A.A. ; 1 triple and 2 twin above-water torpedo tubes.

GERMANY.

LIGHT CRUISER.

Emden.

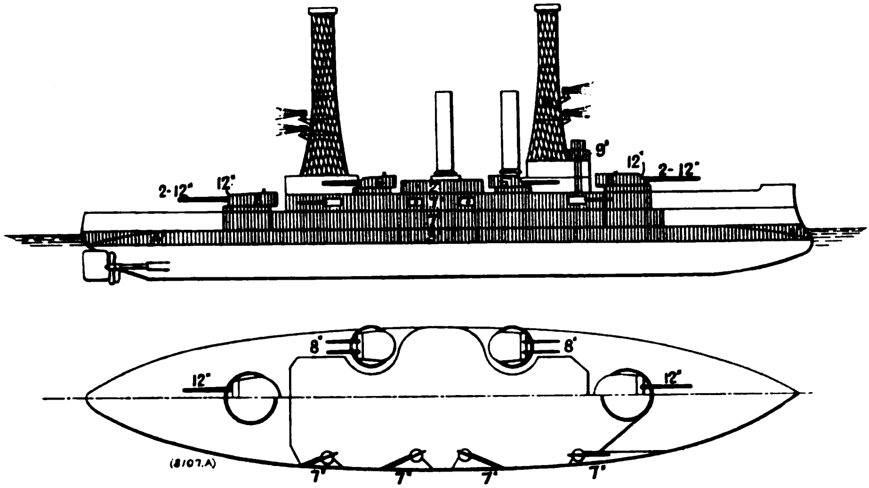


Length (extreme), 510 ft. 2 ins.; 6,000 tons; Speed, 27½ knots; Completed, 1925.
Armament, 8—6-in.; 3—22-pr.; 2 double torpedo tubes.

GREECE.

BATTLESHIPS.

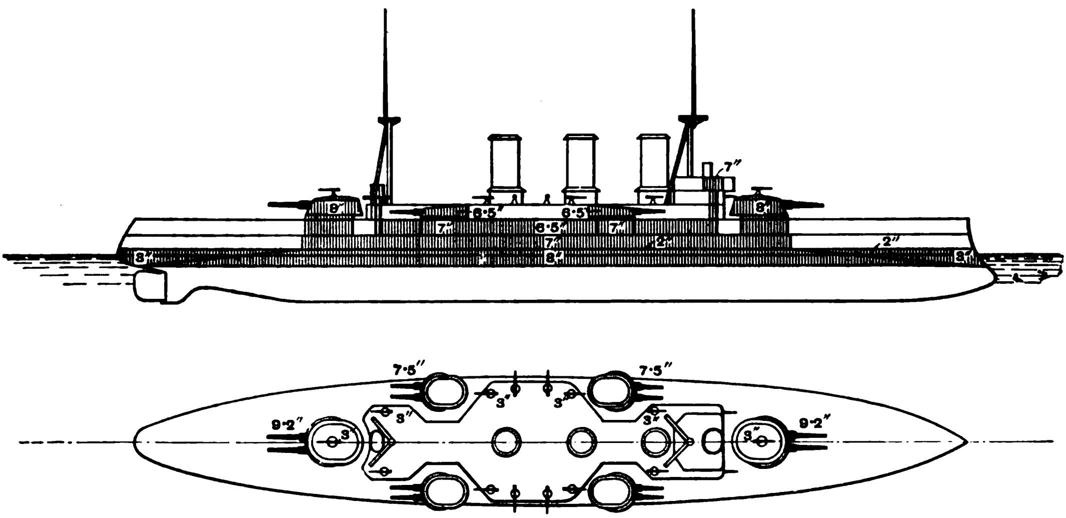
Lemnos (*ex* Idaho). **Kilkis (*ex* Mississippi).**



Length, 375 ft. ; 13,000 tons ; Speed, 17·1 knots ; Completed, 1908.
Armament, 4—12-in. ; 8—8-in. ; 8—7-in. ; 8—13 pr., 1—12 pr. AA, 4—6 pr. ; 14 smaller.

ARMOURED CRUISER.

Giorgios Averoff.

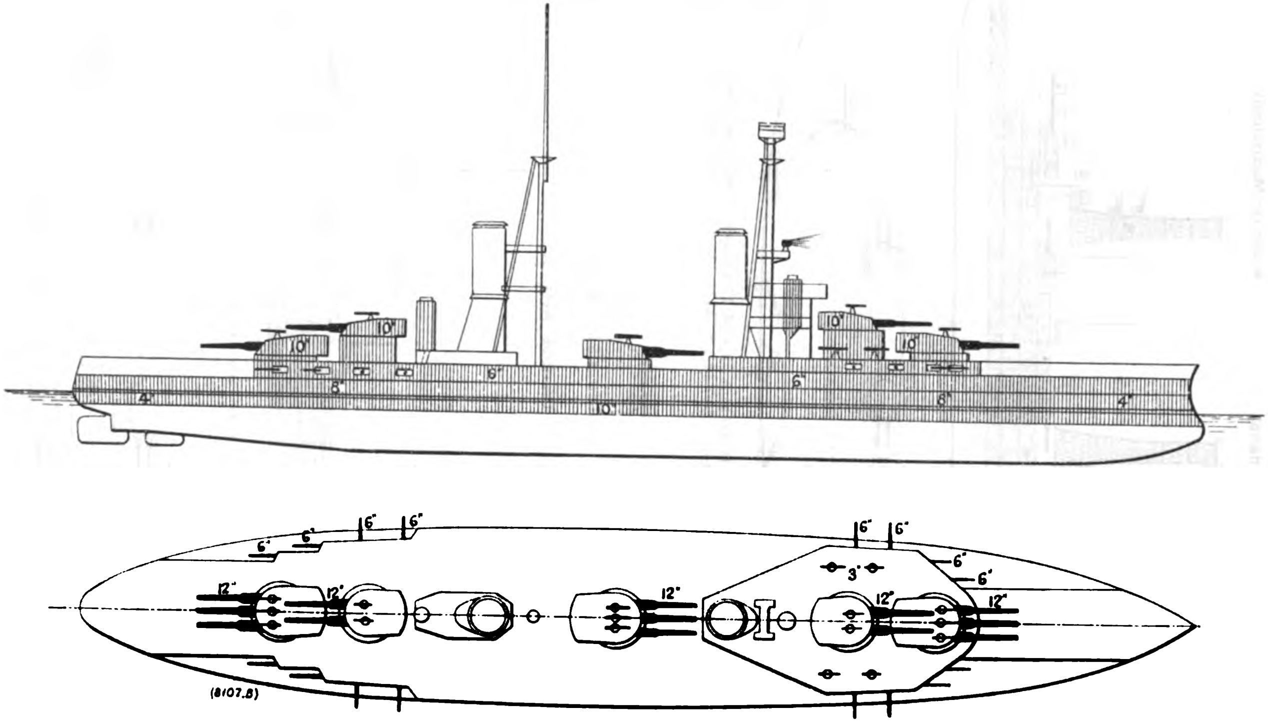


Length, 429 ft. 9 ins. ; 9,956 tons ; Speed, 24 knots ; Completed, 1911.
Armament, 4—9·2-in. ; 8—7·5-in. ; 16—14-pr., 1—12-pr. AA. ; 6 smaller.

ITALY.

BATTLESHIPS.

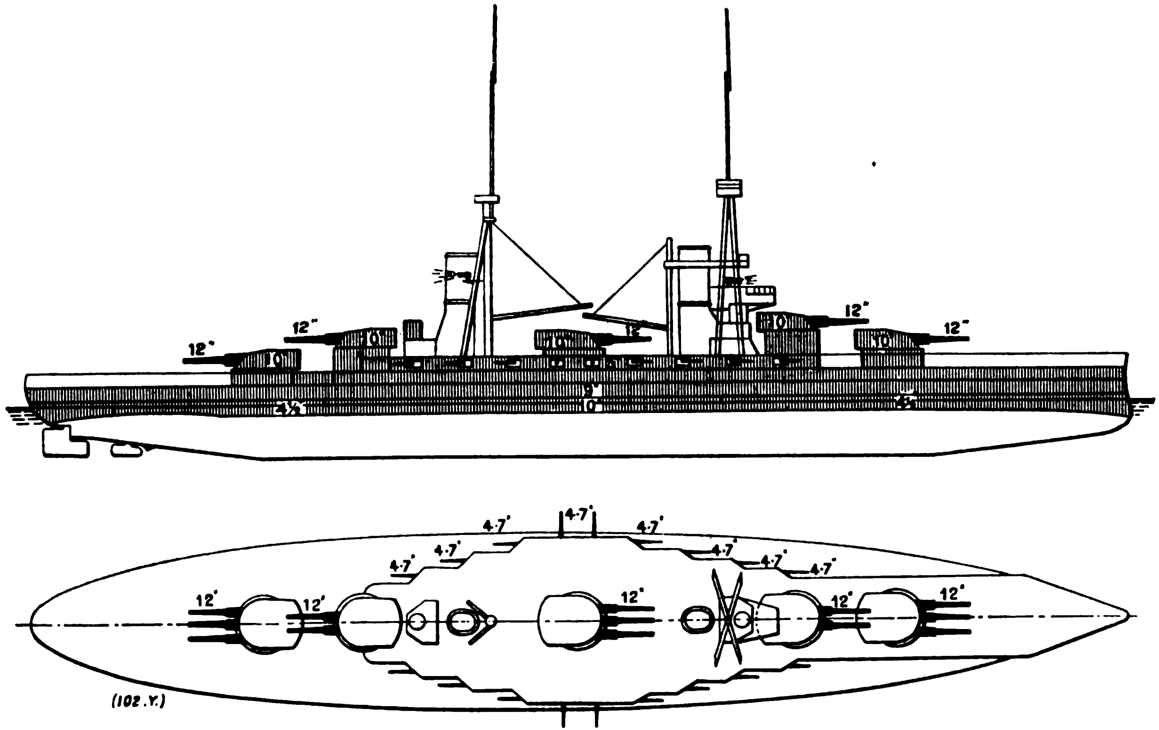
Andrea Doria. **Caio Duilio.**



Length (extreme), 575 ft. 9 ins.; Length B.P., 554 ft. 4 ins.; Speed, 22 knots; Completed, 1915.
Armament, 13—12-in.; 16—6-in.; 13—14 pr.; 6—14 pr. A.A.; 2 M.; 4 L.

ITALY.

Conte di Cavour.* **Giulio Cesare.**

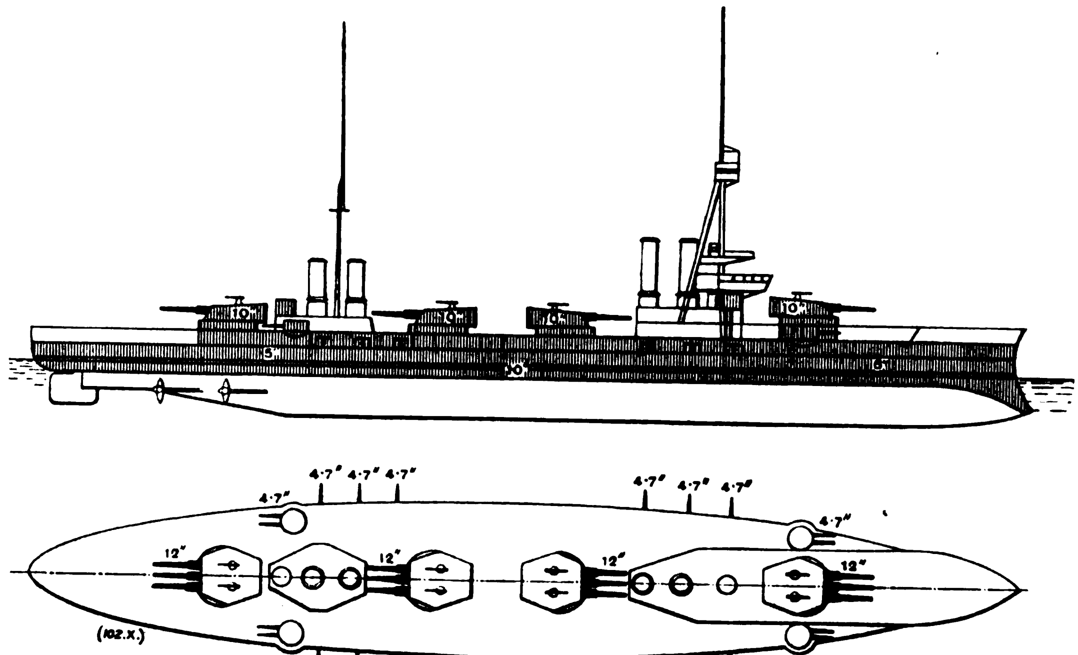


Length (extreme), 575 ft. 9 ins. ; Length B.P., 554 ft. 4 ins. ; Speed, 22 knots ; 22,023 tons ; Completed, 1914-1915.
Armament, 13—12-in. ; 18—4·7-in. ; 13—14-pr. ; 6—14-pr. A.A.
*** A fixed catapult is mounted on port side of Forecastle Deck forward.**

ITALY.

BATTLESHIP.

Dante Alighieri.

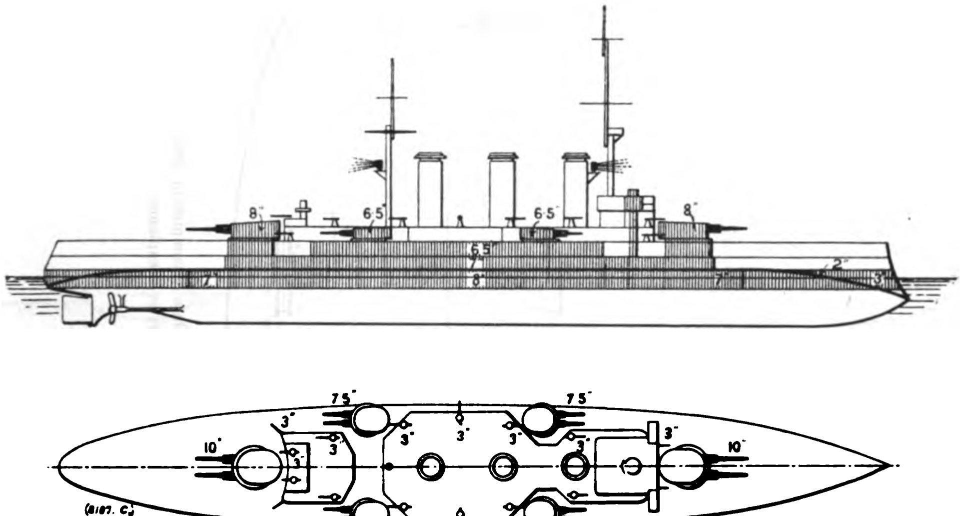


Length (extreme), 549 ft. 6 ins. ; Length B.P., 519 ft. 8¼ ins. ; Speed, 23 knots ; 19,400 tons ; Completed, 1912.
Armament, 12—12-in. ; 20—4·7-in. ; 12—14-pr. ; and 6—14-pr. H.A.

ITALY.

ARMOURED CRUISER.

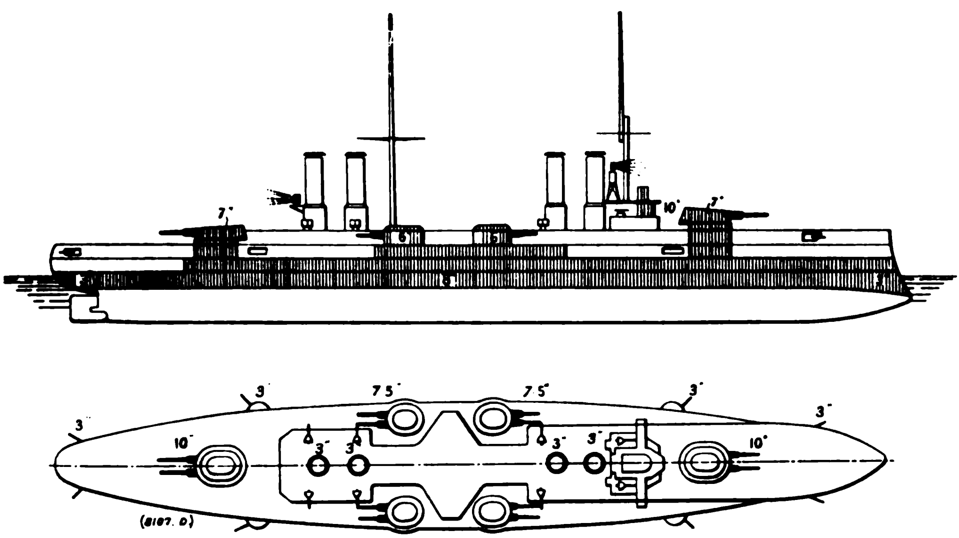
Pisa.



Length (extreme), 460 ft. 11 ins. ; Length B.P., 426 ft. 6 ins. ; Speed, 23 knots ; 10,600 tons ; Completed, 1908.
Armament, 4—10-in. ; 8—7·5-in. ; 14—14-pr. ; 6—14-pr. H.A.
Serving as Cadet Training Ship.

ARMOURED CRUISERS.

S. Giorgio. S. Marco.

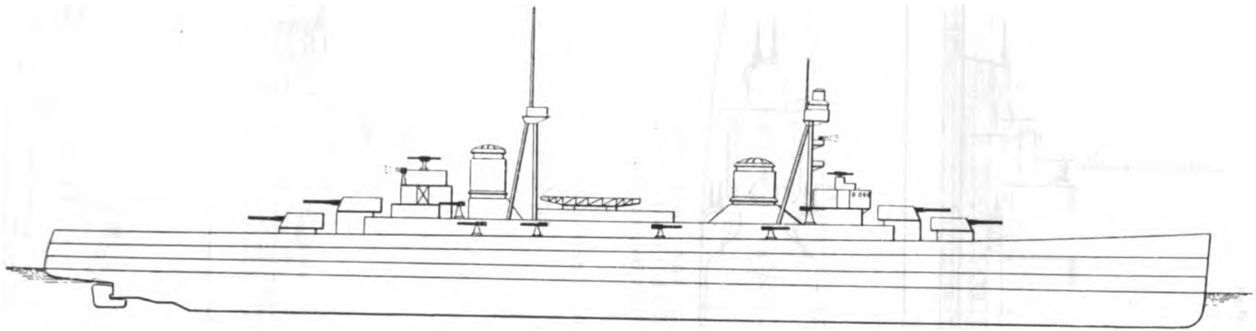


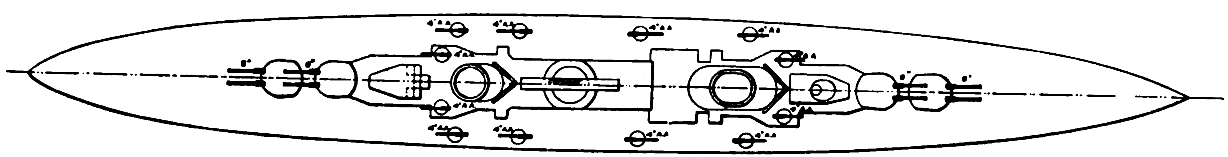
Length (extreme), 462 ft. 2 ins. ; Length B.P., 429 ft. 10 ins. ;
Speed, 22·5 and 23 knots ; 10,800 and 10,000 tons ; Completed, 1910
Armament, 4—10-in. ; 8—7·5-in. ; 10—14-pr. ; 6—14-pr. H.A.

ITALY.

CRUISERS.

Trento. Trieste.



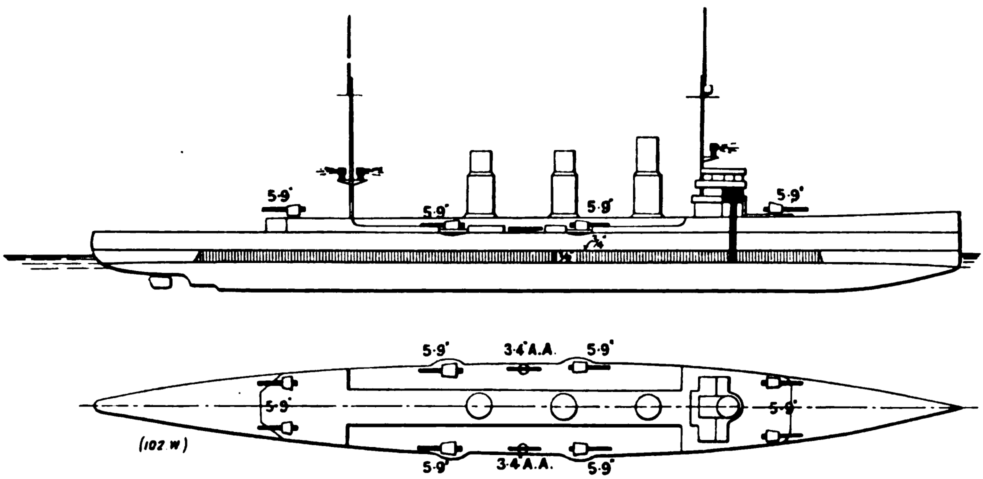


Length (extreme), 642 ft.; Length B.P., 612 ft.; 10,000 tons; Speed, 35-36 knots. Probable date of completion 1927
Armament, 8—8-in., 12—4-in. A.A.; 2 twin 21-in. T.T.'s. Fitted with a catapult. Carries 2 seaplanes.

ITALY.

LIGHT CRUISER.

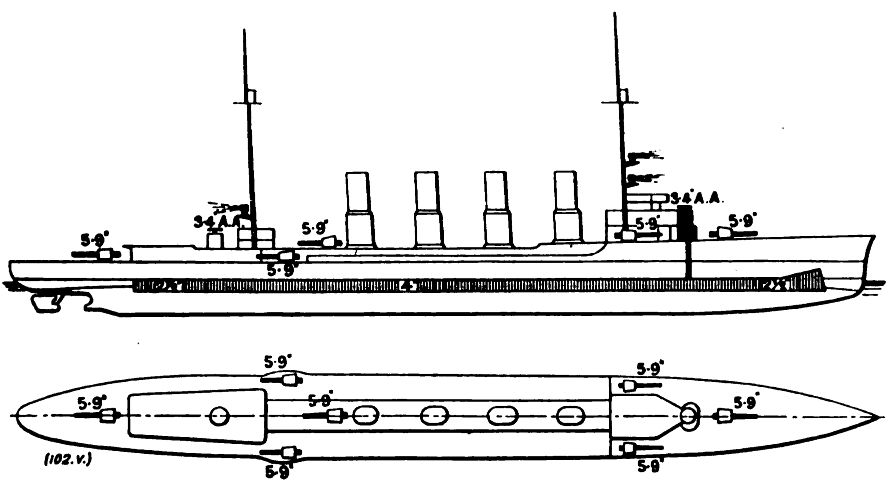
Bari (*ex-German* Pillau).



Length (extreme), 441 ft. ; Length B.P., 403 ft. ; 4,320 tons ; Speed, 27·5 knots ; Completed, 1914.
Armament, 8—5·9.in. ; 3—3-in. A.A. ; 2 above-water torpedo tubes (19·7-in. torpedoes). Can carry 120 mines.

LIGHT CRUISER.

Taranto (*ex-German* Strassburg).

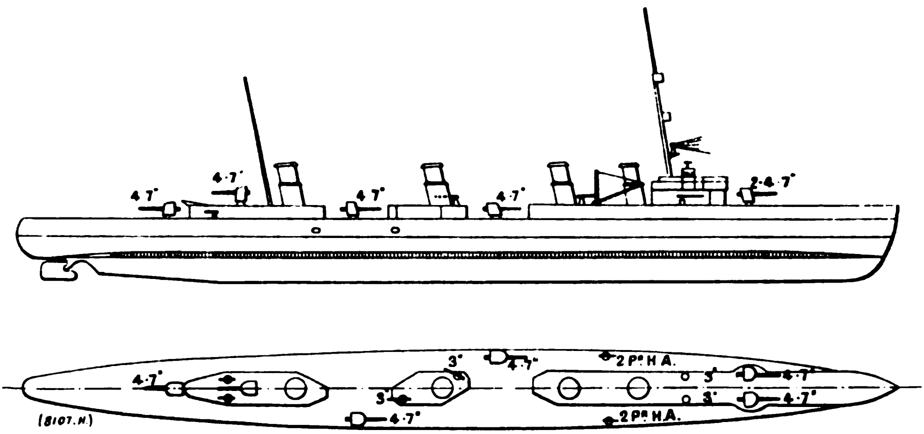


Length (water-line), 446 ft. 3 ins. ; 4,480 tons ; Speed, 26·9 knots ; Completed, 1912.
Armament, 7—5·9-in. ; 3—3-in. A.A. ; 2 torpedo tubes submerged (19·7-in. torpedoes). Can carry 120 mines.

ITALY.

LIGHT CRUISERS.

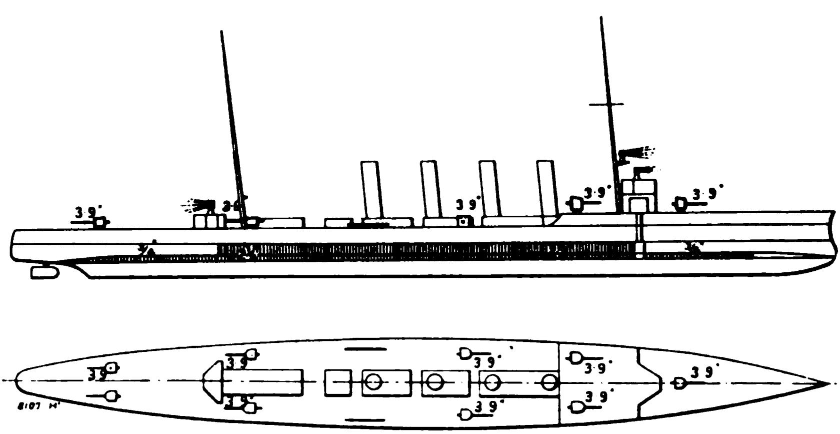
Marsala. **Nino Bixio.**



Length (extreme), 460 ft. ; Length B.P., 430 ft. ; Speed, 28 knots ; 3,600 tons ; Completed, 1914.
Armament, 6—4·7-in. ; 6—14-pr. ; 2—2-pr. A.A. ; 2 above-water 18-in torpedo tubes ; 150 mines.

LIGHT CRUISERS.

Venezia (*ex-Austrian* **Saida**). **Brindisi** (*ex-Austrian* **Helgoland**).



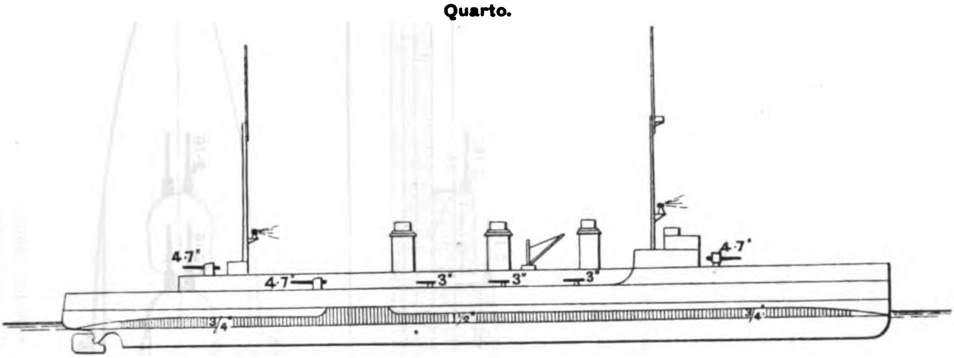
Length (extreme), 430 ft. ; Length (W.L.), 416 ft. 9 ins. ; Speed, 27 knots ; 3,440 tons ; Completed, 1914-15.
Armament, 9—3·9-in. ; 1—3-in. A.A. ; 3 twin above-water torpedo tubes.

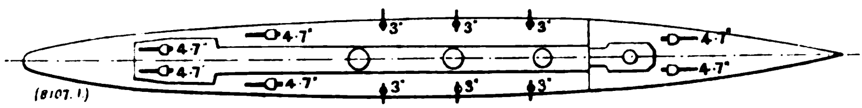
NOTE.—Thionville (*ex*-Novara), sister ship, allocated to France.

ITALY.

LIGHT CRUISER.

Quarto.

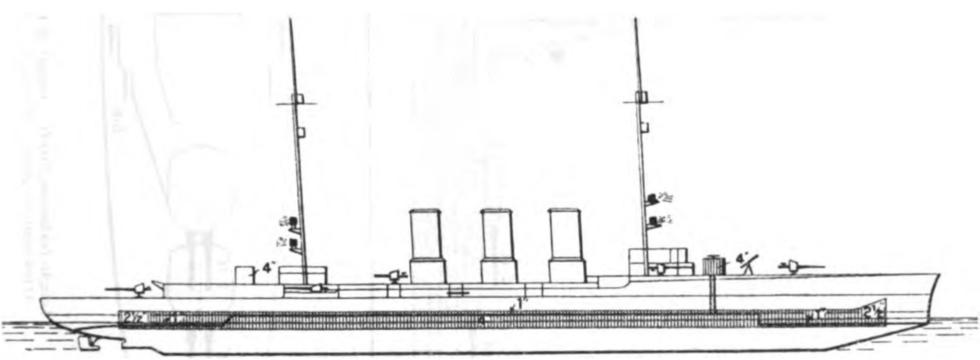


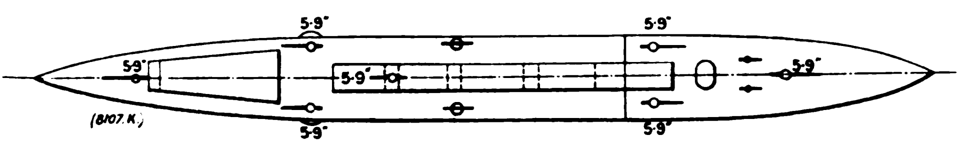


**Length (extreme), 431 ft. 9 ins.; Length B.P., 413 ft. 5 ins.; Speed, 28 knots; 3,220 tons; Completed, 1912.
Armament, 6—4·7-in.; 6—14-pr.; 2—2-pr. A.A.; 2 above-water 18-in. torpedo tubes; 150 mines.**

LIGHT CRUISER.

Ancona (*formerly German* Graudenz).



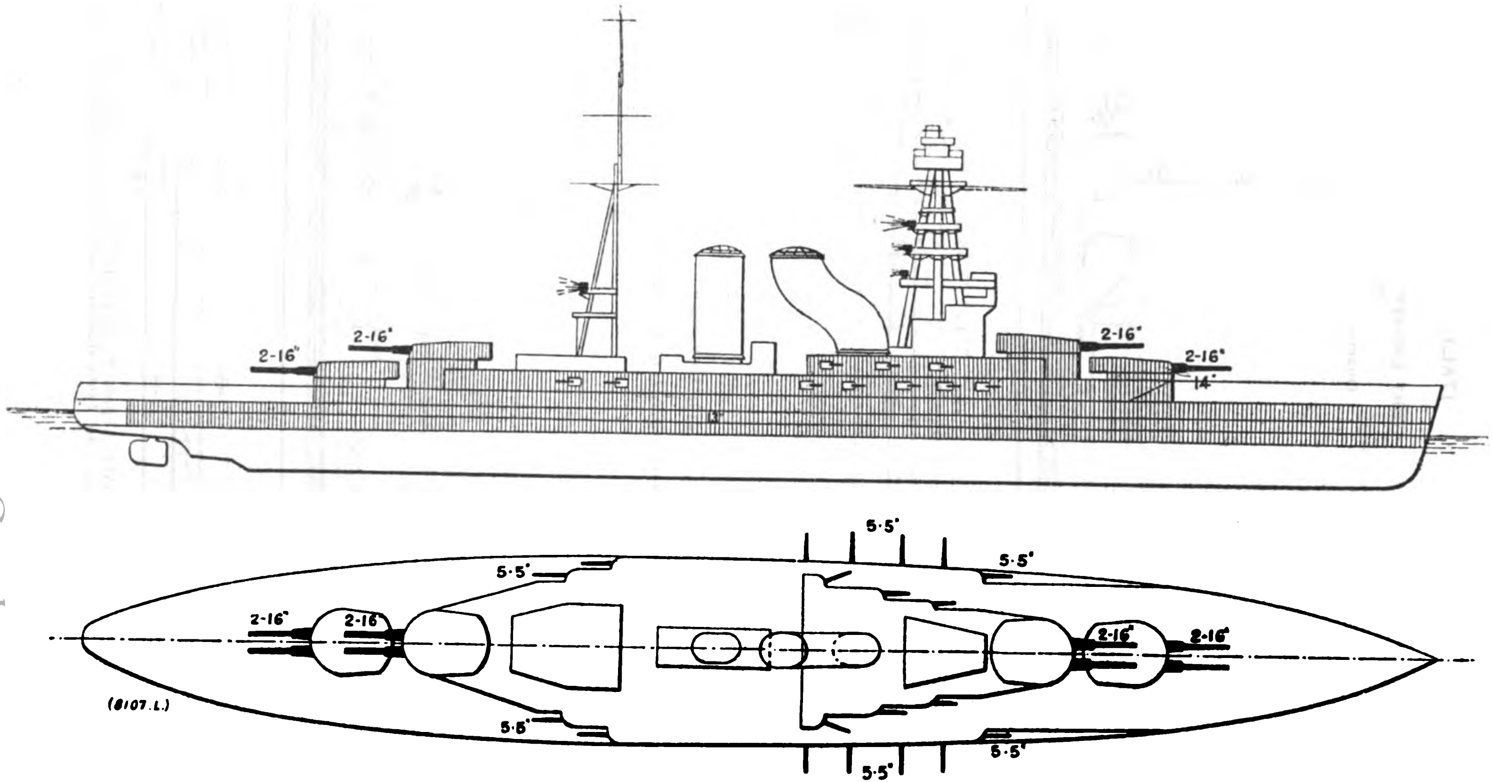


**Length (extreme), 456 ft.; Speed, 27½ knots; 4,842 tons; Completed, 1914.
Armament, 7—5·9-in.; 2—22-pr. A.A.; 2 submerged and 2 above-water torpedo tubes; 120 mines.**

JAPAN.

BATTLESHIPS.

Nagato. **Mutsu.**

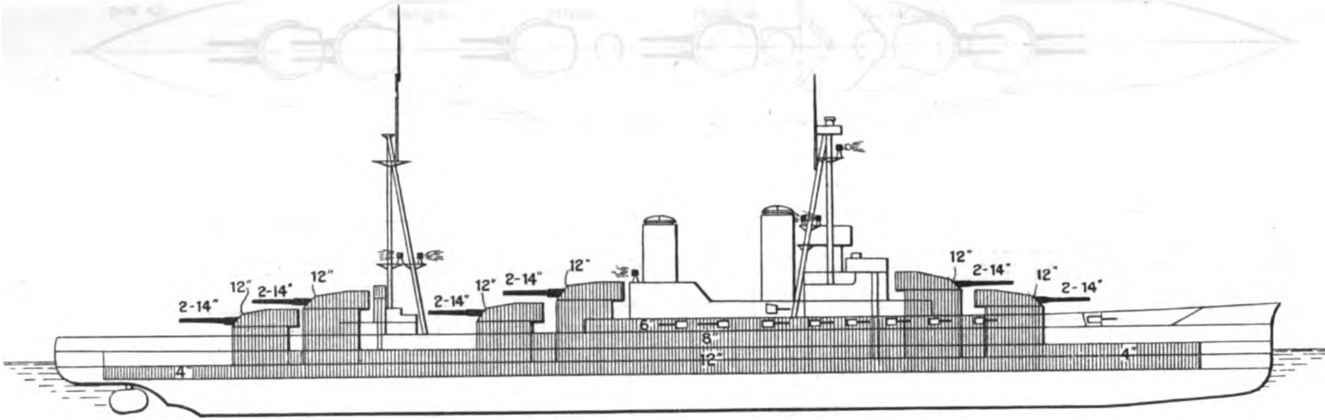


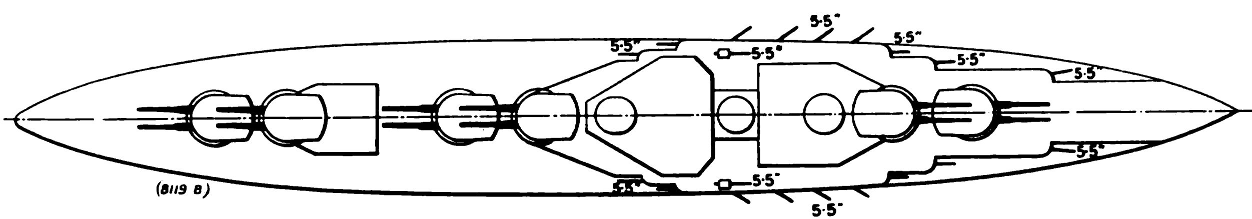
Length (extreme), 700 ft. ; Length B.P., 660 ft. 7 ins. ; Speed, 23 knots ; 33,800 tons ; Completed, 1920-1921.
Armament, 8—16-in. ; 20—5·5-in. ; 4—12-pr. A.A. ; 4 above-water and 4 submerged 21-in. torpedo tubes.

JAPAN.

BATTLESHIPS.

Ise. **Hyuga.**



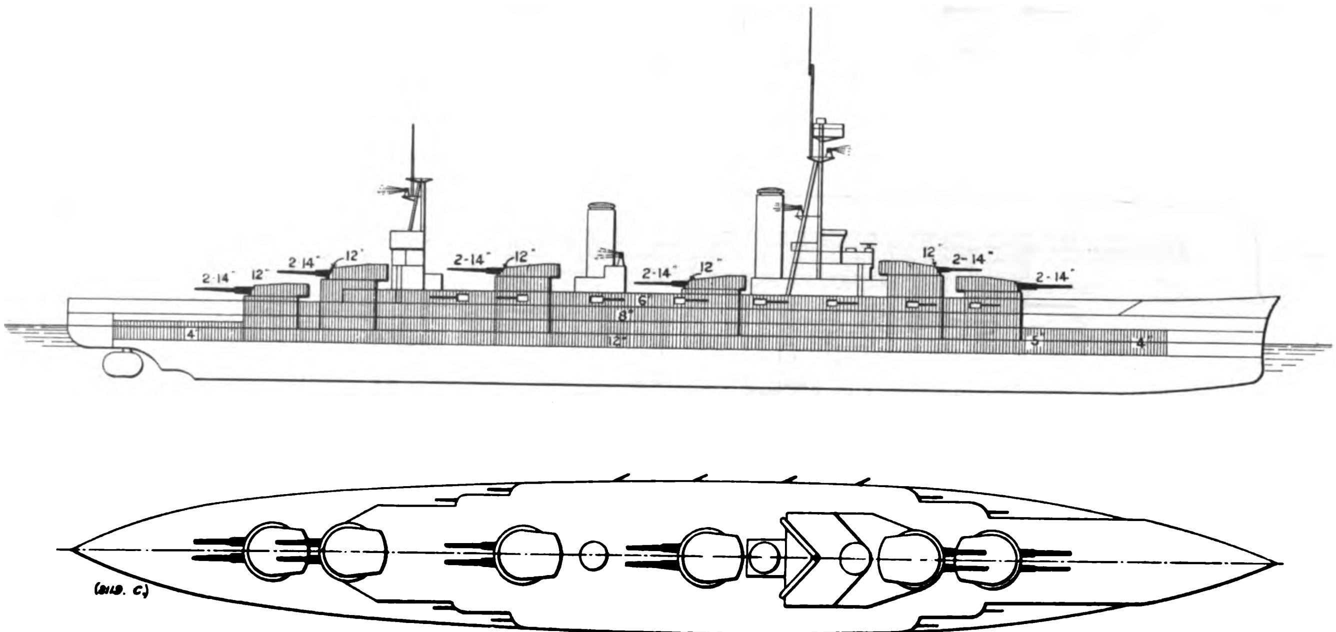


Length (extreme), 683 ft. ; Length B.P., 640 ft. ; Speed, 23 knots ; 31,260 tons ; Completed, 1917-18.
Armament, 12—14-in. ; 20—5·5-in. ; 4—12-pr. A.A. 6 submerged 21-in. torpedo tubes.

JAPAN.

BATTLESHIPS.

Fuso. **Yamashiro**

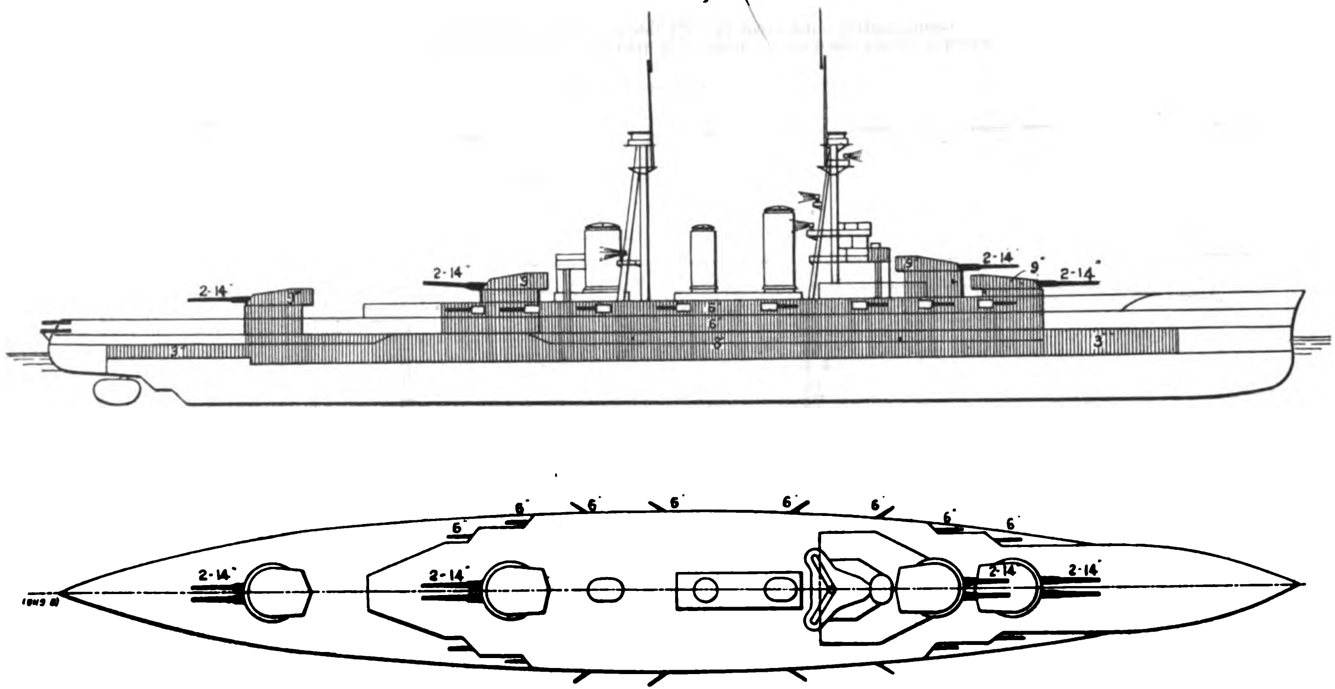


Length (extreme), 673 ft.; Length B.P., 630 ft.; Speed, 22·5 knots; 30,600 tons; Completed, 1915–17.
Armament, 12—14-in.; 16—6-in.; 4—12-pr. A.A.; 6 submerged 21-in. torpedo tubes.

JAPAN.

BATTLE-CRUISERS.

Kongo. **Hiyei.** **Haruna.** **Kirishima**



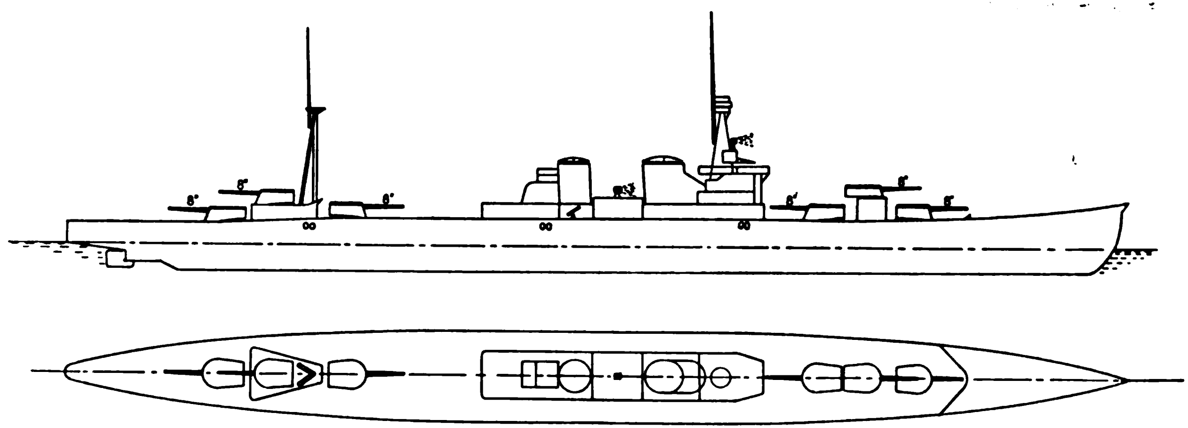
Length (extreme), 704 ft. ; Length B.P., 653 ft. 6 ins. ; Speed, 27·5 knots ; 27,500 tons ; Completed, 1913–15.
Armament, 8—14-in. ; 16—6-in. ; 4—12-pr. A.A. ; 8 submerged, 21-in. torpedo tubes.

NOTE.—Funnels as shown for Kongo ; in the other three ships the forward funnel is slightly farther aft.

JAPAN.

LIGHT CRUISERS.

Furutaka. Kako. Aoba. Kinugasa.

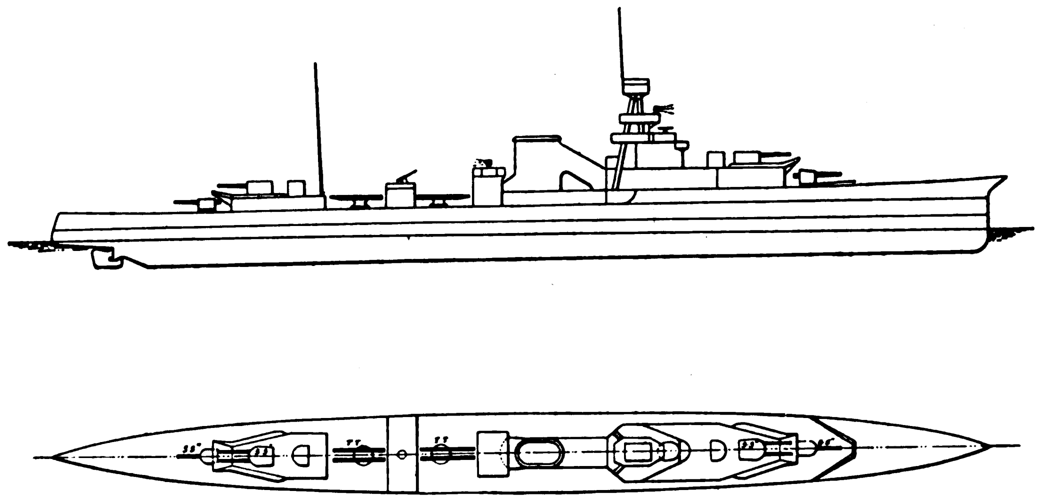


Length (extreme), 596 ft. ; Length B.P., 580 ft. ; 7,100 tons ; Speed, 33 knots. Armament, 6—8-in, ; 8—12-pr. A.A. ; 12 above-water torpedo tubes.

JAPAN.

LIGHT CRUISER.

Yubari.



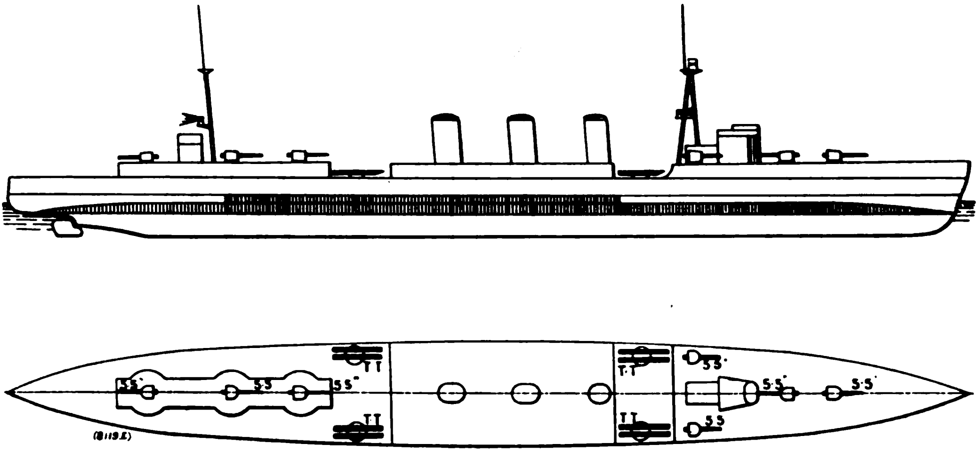
Length (extreme), 465 ft.; Length B P., 435 ft.; 3,100 tons; Speed, 33 knots. Completed, 1923.
Armament, 6—5·5-in.; 1—12-pr. A.A.; 2 M.; 2 twin 21-in. T.T.'s.

JAPAN.

LIGHT CRUISERS.

* {Isudzu. Nagara.} Natori. Yura. Abukama. Kinu. Jindzu. Sendai.

Oh-I. Kiso. Kitakami. Tama. Kuma.

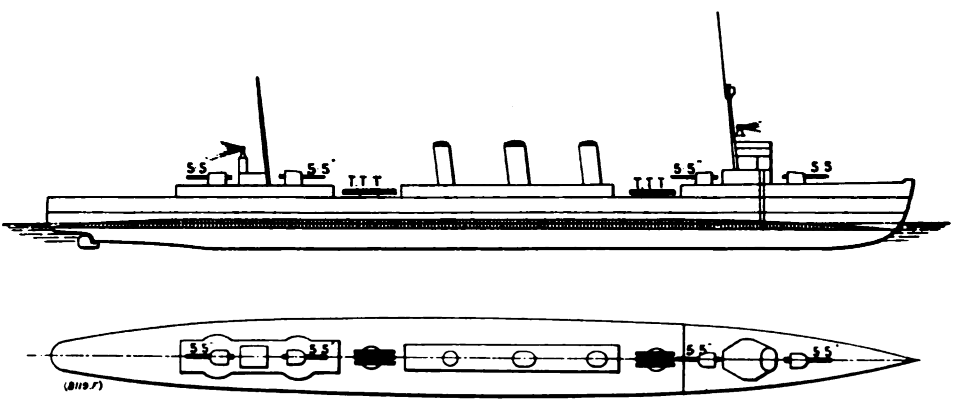


Length (extreme), 535 ft. ; Length B.P., 500 ft. ; Speed, 33 knots ; 5,500 tons ; Completed, 1920-21.
Armament, 7—5·5-in. ; 3—12-pr. A.A. ; 4 twin above-water 21-in torpedo tubes.

* Plans apply generally to these vessels except that aircraft hangar is arranged in bridge structure. The displacement is about 70 tons higher than Oh-I, etc. These vessels were completed, 1921-25.

LIGHT CRUISERS.

Tatsuta. Tenryu.*

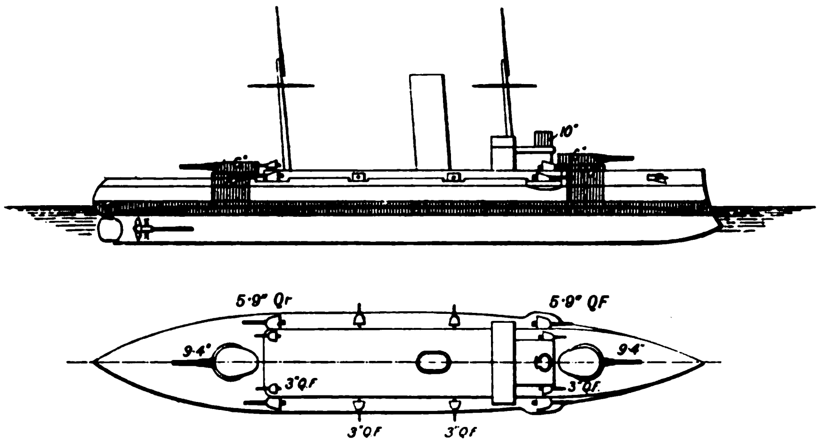


Length (extreme), 450 ft. ; Speed, 33 knots ; 3,500 tons ; Completed, 1919.
Armament, 4—5·5-in. ; 1—12-pr. A.A. ; 2 triple above-water torpedo tubes
* Fitted for Minelaying.

NETHERLANDS.

COAST DEFENCE SHIPS.

Hertog Hendrik **Marten Tromp.**

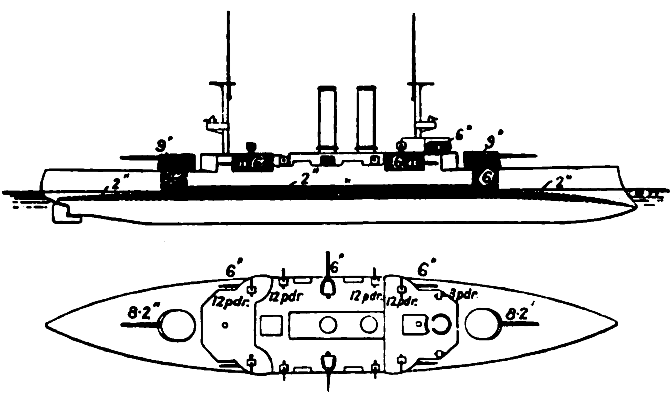


Length, 316½—330 ft.; 5000—5216 tons; Speed, 16 knots; Completed, 1903—1906.
Armament: Hertog Hendrik: 2—9·4-in.; 6—5·9-in.; 4—2·9-in.; 4 or 6 small.
Marten Tromp: 2—9·4-in.; 4—5·9-in.; 8—2·9-in.; 6 small.

NORWAY.

COAST DEFENCE SHIPS.

Norge. **Eidsvold.**

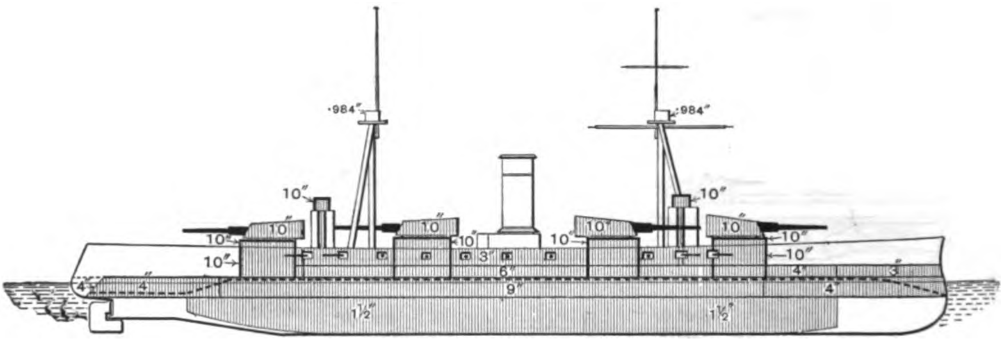


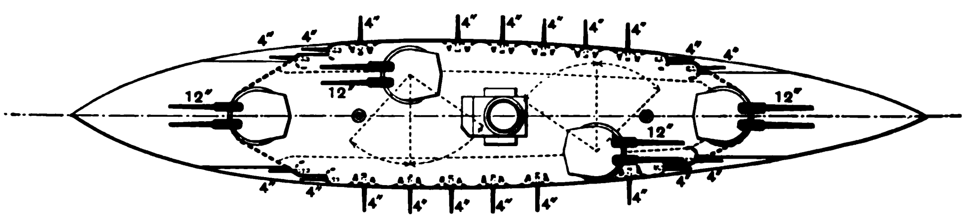
Length, 290 ft.; 4,233 tons; Speed, 16·9 knots; Completed, 1901.
Armament, 2—8·2-in.; 6—6-in.; 8—12-pr.; 6 small.

SPAIN.

BATTLESHIPS.

Alfonso XIII. Jaime I.

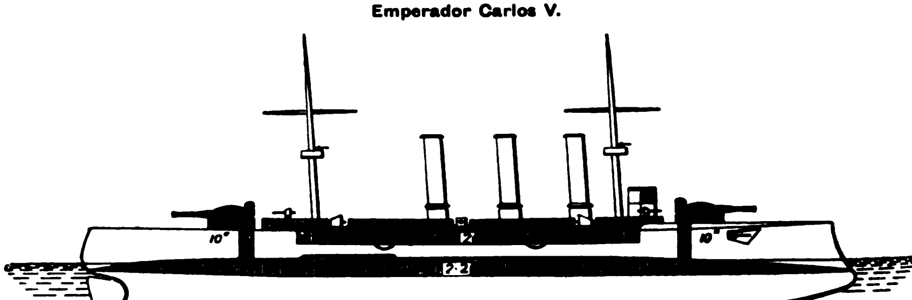


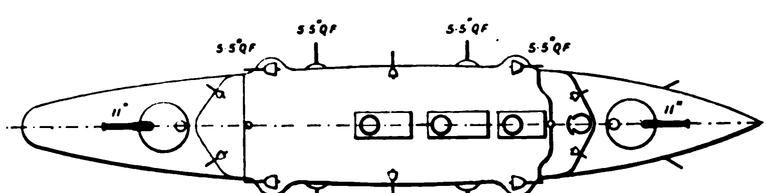


Length (extreme), 459 ft. ; Length W.L., 435 ft. ; 15,460–15,700 tons ; Speed, 19·5 knots to 20·2 knots ; Completed, 1913–1916
Armament, 8—12-in. ; 20—4-in. ; 6 small.

ARMOURED CRUISER.

Emperador Carlos V.



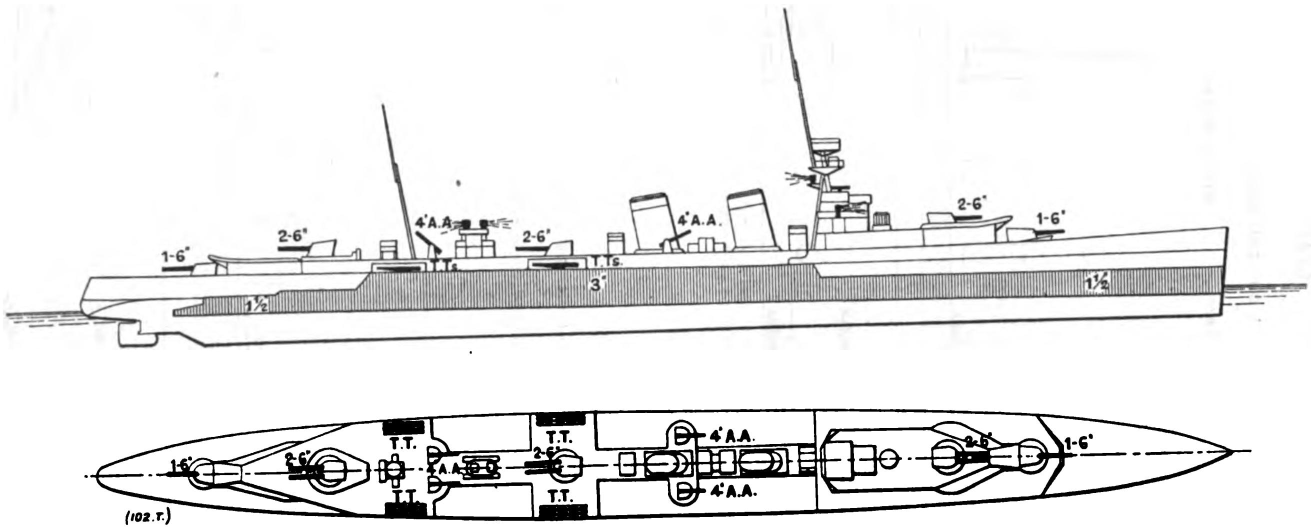


Length, 404 ft. ; 9,900 tons ; Speed, 19 knots ; Completed, 1898.
Armament, 2—11-in. ; 8—5·5-in. ; 4—4·1-in. ; 22 small.

SPAIN.

LIGHT CRUISERS.

Principe Alfonso. **Almirante Cervera.**

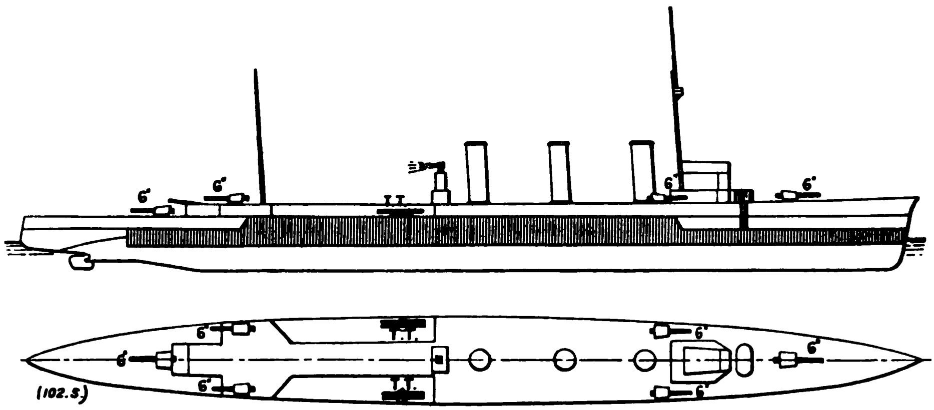


Length (extreme), 579 ft. 6 ins.; Length, B.P., 545 ft.; 7,850 tons; Speed, 33 knots. (Building.)
Armament, 8—6-in.; 4—4-in. A.A., 2—3 pr., 4 triple above-water torpedo tubes (21-in. torpedoes).

SPAIN.

LIGHT CRUISERS.

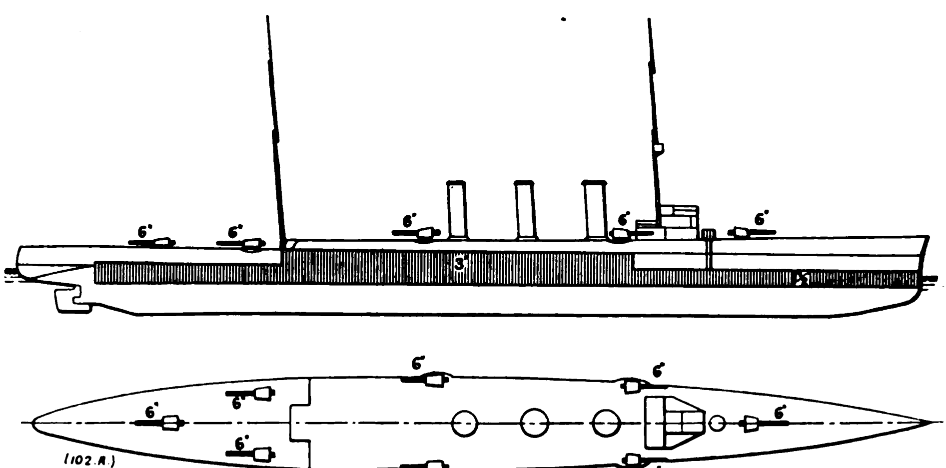
Don Blas Lezo. Mendez Nuñez.



Length. (extreme), 462 ft. ; Length B.P., 439 ft. ; 4,700 tons ; Speed, 29 knots. Completed, 1924.
Armament, 6—6-in. ; 4—3-pr. A.A. ; 4 M. ; 4 above-water triple torpedo tubes (21-in. torpedoes).

LIGHT CRUISER.

Reina Victoria Eugenia.



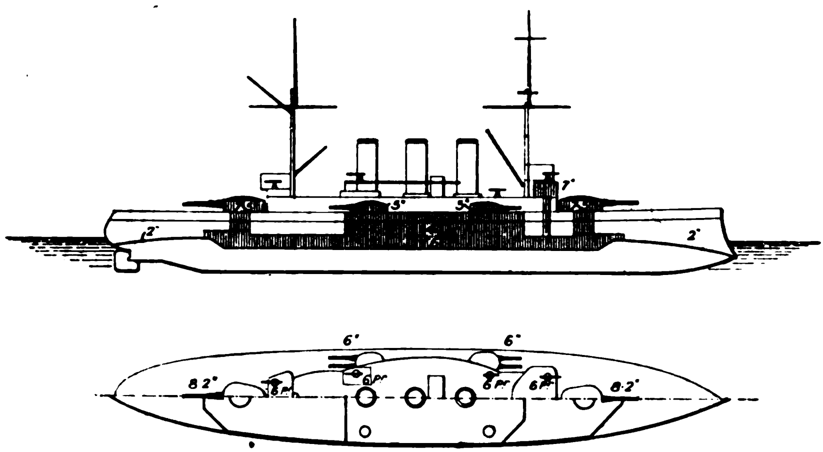
Length (extreme), 462 ft. ; 5,700 tons ; Speed, 25½ knots ; Completed, 1922.
Armament, 9 *—6-in. ; 1—12-pr. ; 4—3-pr. A.A. ; 4 M. ; 1 L. ; 4 torpedo tubes.

* NOTE.—There should be two 6-in. guns abreast forward instead of one on the centre line as shown.

SWEDEN.

BATTLESHIP.

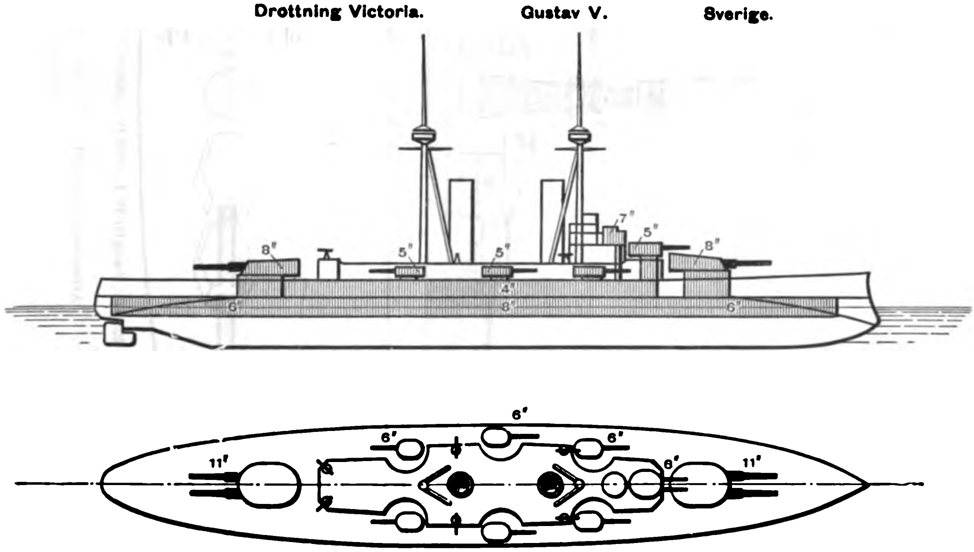
Oscar II.



Length, 313·6 ft. ; 4,058 tons ; Speed, 18 knots ; Completed, 1907
Armament, 2—8·2-in. ; 8—6-in. ; 14 small.

ARMOURED CRUISERS.

Drottning Victoria. Gustav V. Sverige.

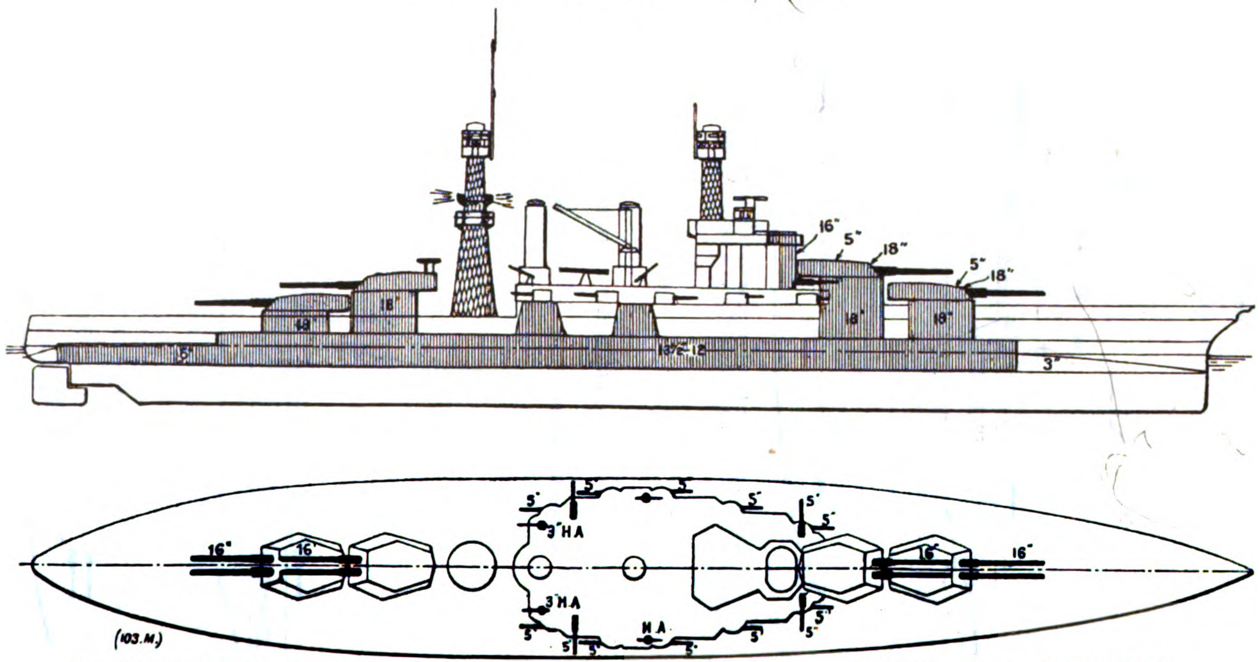


Length, 396·7 ft. ; 7,605 tons ; Speed, 22 knots ; Completed, 1917–1922.
Armament, 4—11-in. ; 8—6-in. ; 6—14-pr. ; 4 small.

UNITED STATES.

BATTLESHIPS.

Colorado. **Maryland.** **West Virginia.**



Length (extreme), 624 ft.; Length W.L., 600 ft.; Speed, 21 knots; 32,600 tons; Maryland, completed, 1921; Colorado and West Virginia Completed, 1923.

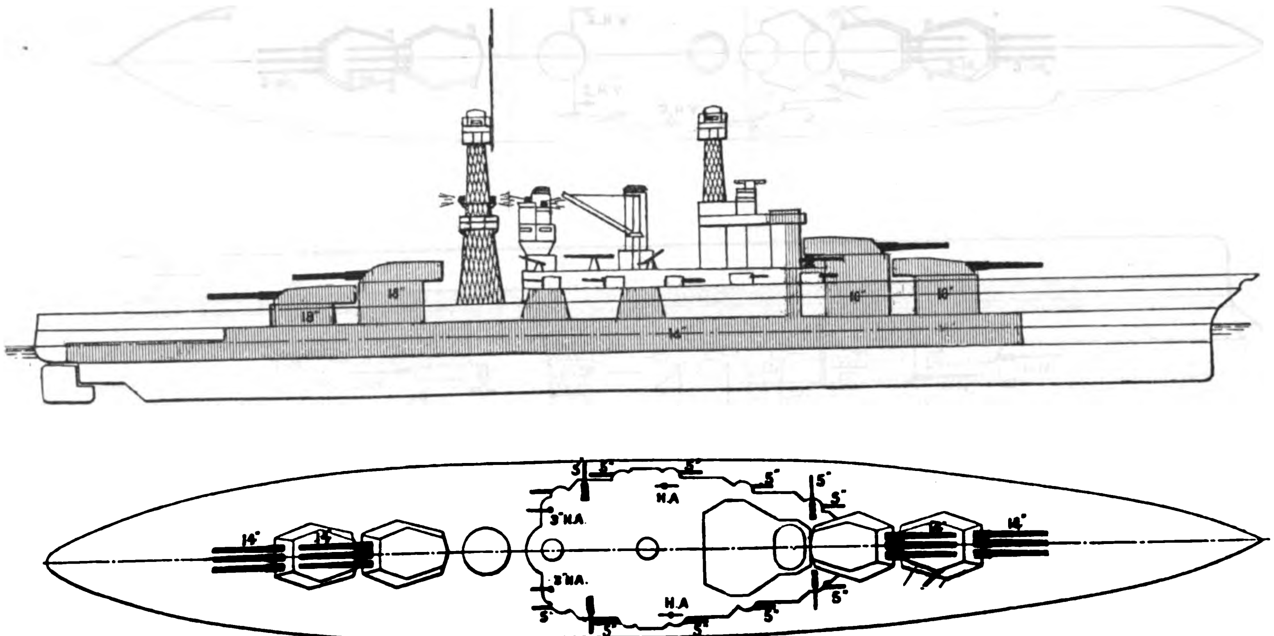
Armament, 8—16-in.; 12—5-in.; 8—5-in. A.A.; 4—6-pr.; 2 submerged 21-in. torpedo tubes.

Catapult mounted right aft on Quarter Deck.

UNITED STATES.

BATTLESHIPS.

California. Tennessee

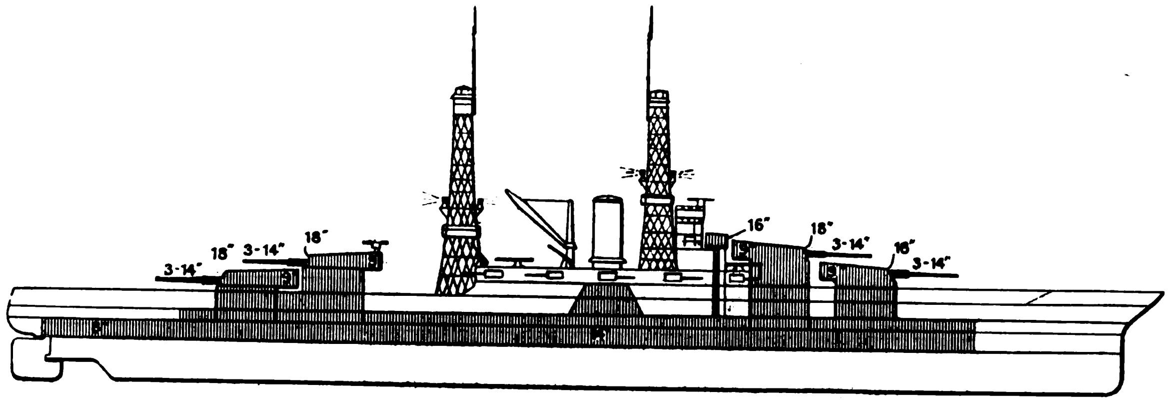


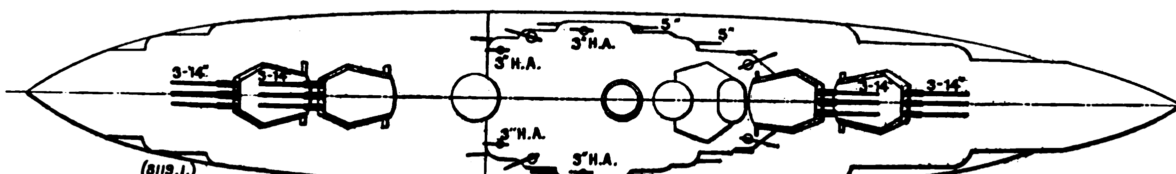
Length (extreme), 624 ft. ; Length W.L., 600 ft. ; Speed, 21 knots ; 32,300 tons ; Completed, 1920-21.
Armament, 12—14-in. ; 12—5-in. ; 8—14-pr. A.A. ; 4—6-pr. : 2 submerged 21-in. torpedo tubes.
Catapult has been fitted right aft on Quarter Deck.

UNITED STATES.

BATTLESHIPS.

Idaho. New Mexico. Mississippi.





Length (extreme), 624 ft.; Length W.L., 600 ft.; Speed, 21 knots; 32,000 tons; Completed, 1917-19.
Armament, 12—14-in.; 12—5-in.; 8—14-pr. A.A.; *4—6-pr.; 2 submerged 21-in. torpedo tubes.

* Idaho, 4—3-pr.

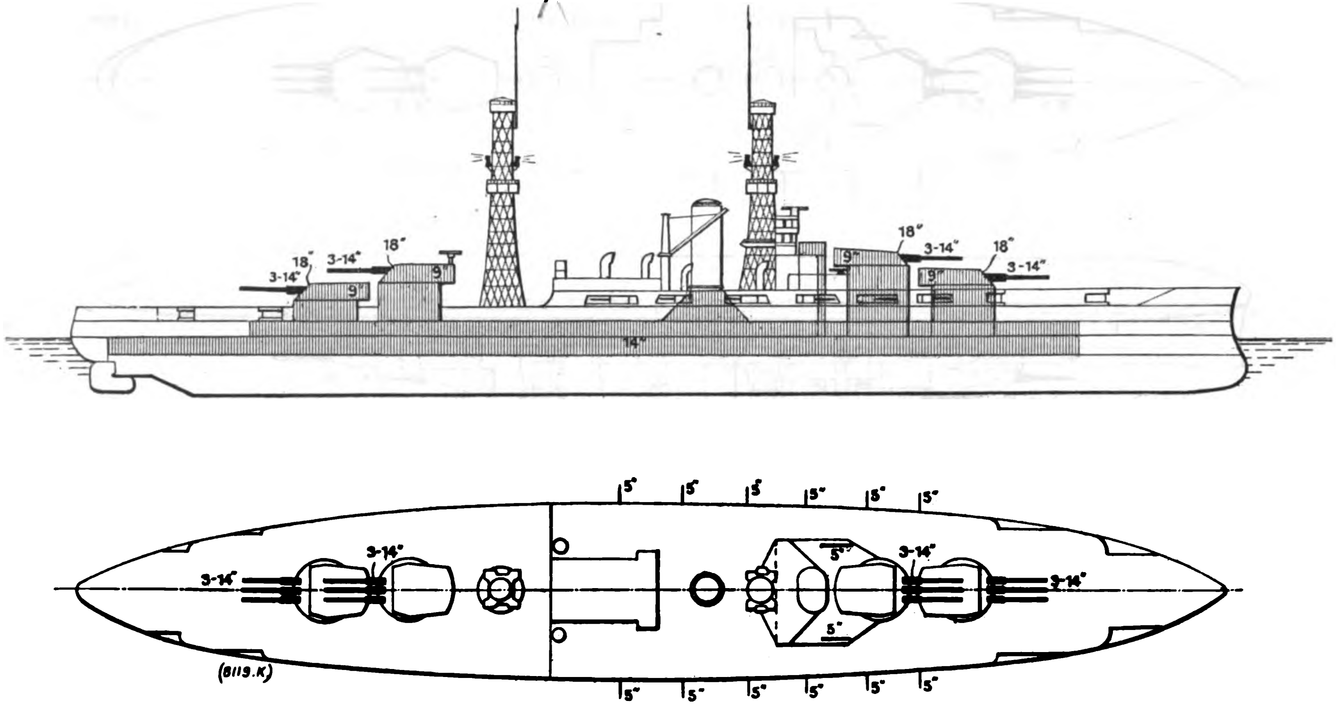
Catapult mounted right aft on Quarter Deck.

Missisipi will shortly be fitted with an additional turret catapult.

UNITED STATES.

BATTLESHIPS.

Arizona. **Pennsylvania.**



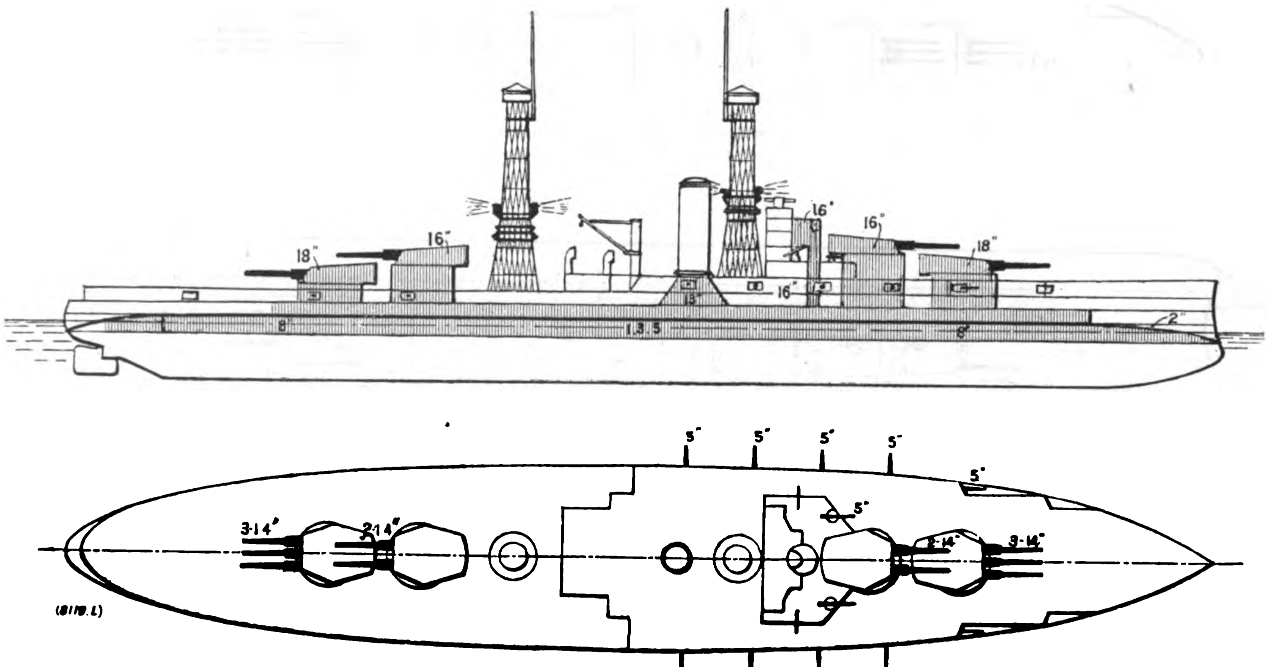
Length (extreme), 608 ft.; Length B.P., 596 ft.; Speed, 21 knots; 31,400 tons; Completed, 1916.
Armament, 12—14-in.; 14—5-in.; 8—3-in. A.A.; 4—3-pr.; 2 submerged 21-in. torpedo tubes.

Catapult mounted right aft on Quarter Deck.

UNITED STATES.

BATTLESHIPS.

Nevada. **Oklahoma.**

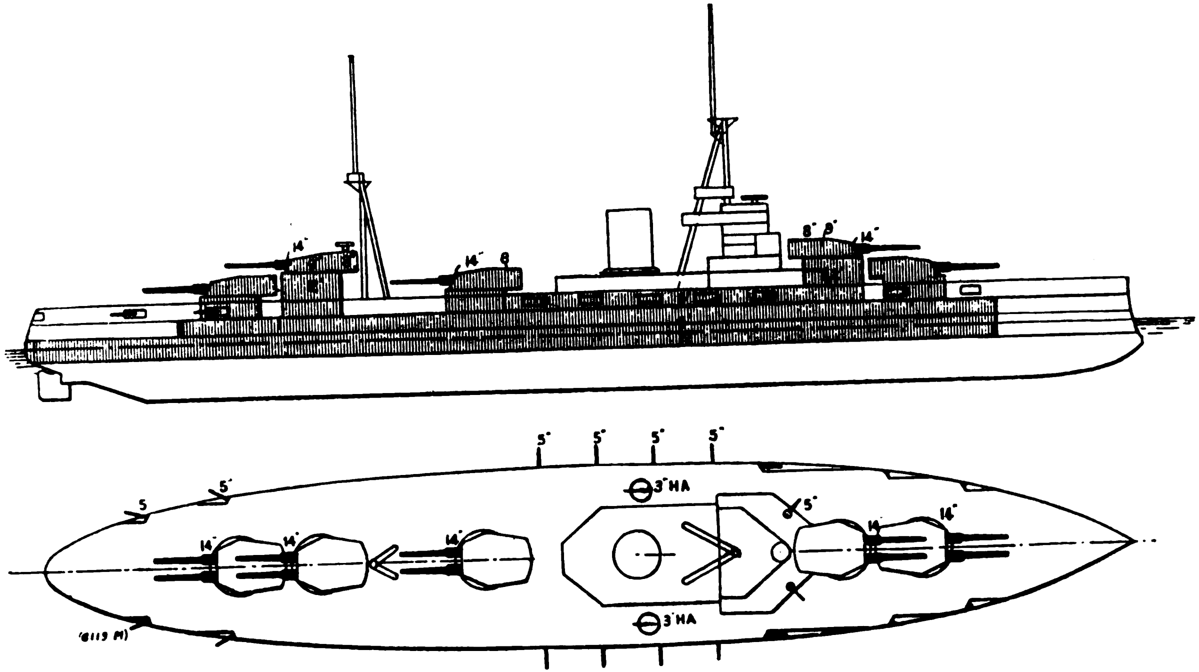


Length (extreme), 583 ft.; Length W.L., 575 ft.; Speed, 20·5 knots; 27,500 tons; Completed, 1916.
Armament, 10—14-in.; 12—5-in. 8—3-in. A.A.; 4—3-pr. 2 submerged 21-in. torpedo tubes.
Catapult mounted.

UNITED STATES.

BATTLESHIPS.

New York. **Texas.**

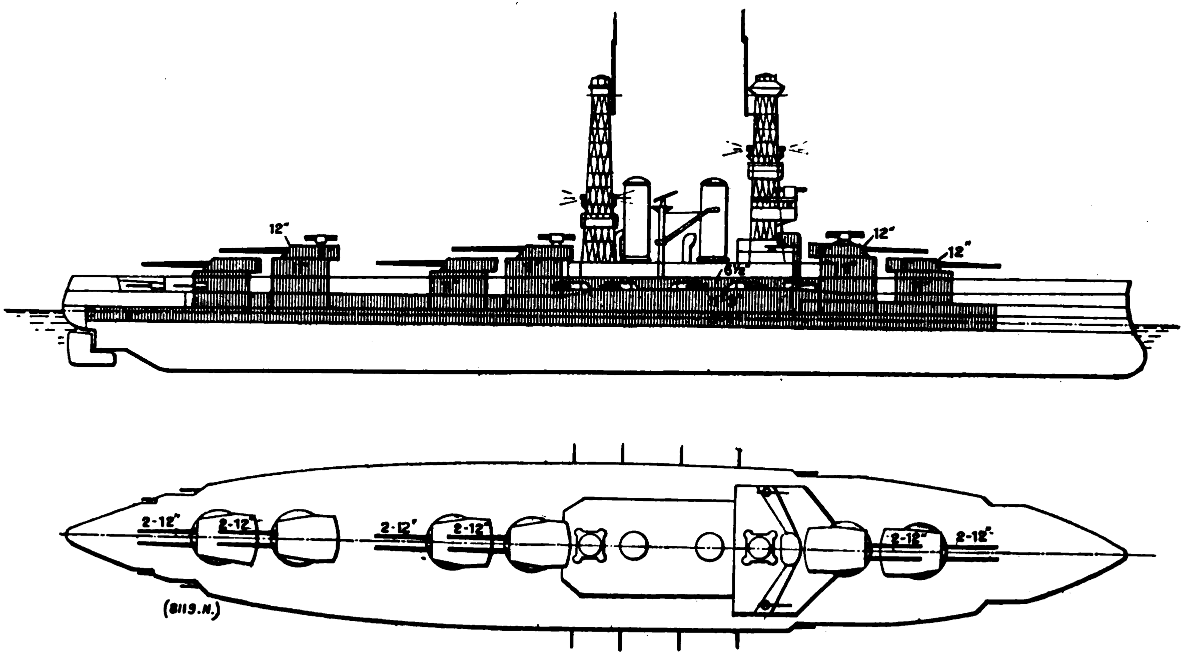


Length (extreme), 573 ft. ; Length W.L., 565 ft. ; Speed, 21 knots ; 27,000 tons ; Completed, 1914.
Armament, 10—14-in. ; 16—5. in. ; 8—3-in. A.A. ; 4—3-pr. ; 4 submerged 21-in. torpedo tubes.

UNITED STATES.

BATTLESHIPS.

Arkansas. Wyoming.



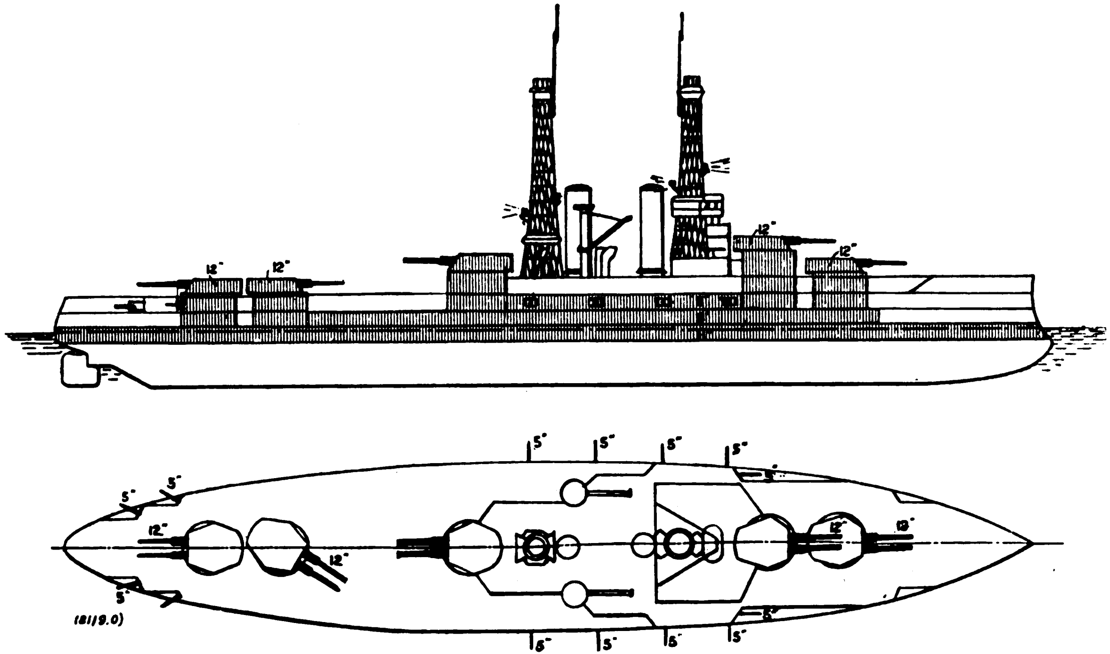
Length (extreme), 562 ft. ; Length W.L., 554 ft. ; Speed, 20·5 knots ; 26,000 tons ; Completed, 1912.
Armament, 12—12-in. ; 16—5-in. ; 8—3-in. A.A. ; 4 or *6—3-pr. ; 2 submerged 21-in. torpedo tubes.

* Wyoming.

UNITED STATES.

BATTLESHIPS.

Utah. Florida.



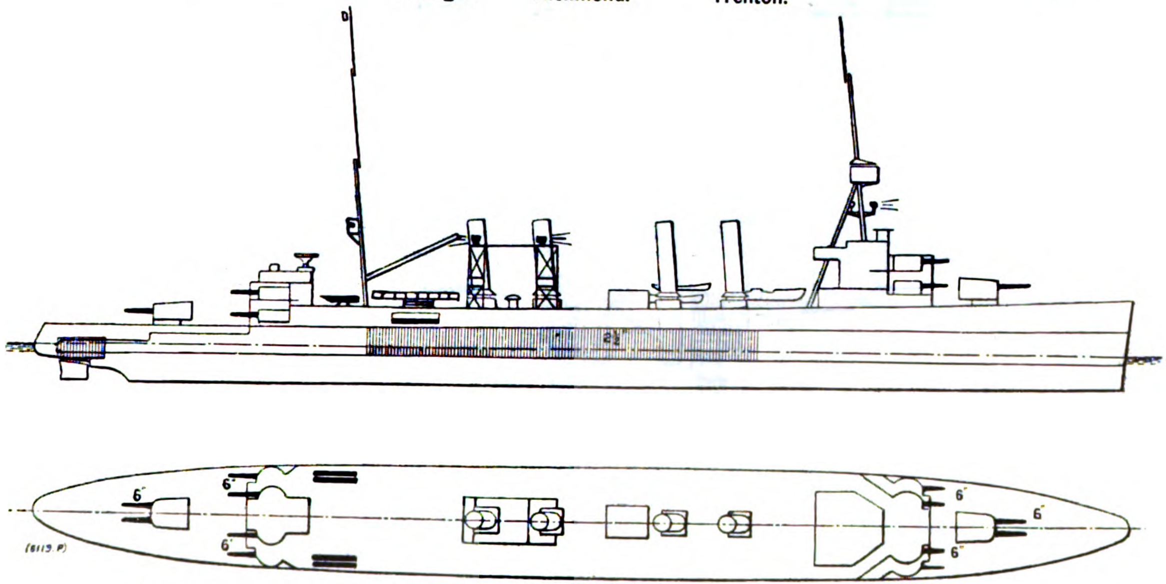
Length (extreme), 521 ft. 6 ins.; Length W.L., 510 ft.; Speed, 20·75 knots; 21,825 tons; Completed, 1911.
Armament, 10—12-in.; 16—5-in.; 8—3-in. A.A.; 4 or *6—3-pr.; 2 submerged 21-in. torpedo tubes.

* Florida.

UNITED STATES.

SCOUT CRUISERS.

Cincinnati. Concord. Detroit. Raleigh. Marblehead. Richmond. Memphis. Trenton. Milwaukee. Omaha.



Length (extreme), 555 ft. 6 ins.; Length W.L., 550 ft.; Speed, 33·7 knots; 7,500 tons. Completed in 1923–25.
Armament, 12—6-in.; 4—3-in. A.A.; 2—3-pr.; 2 twin and 2 triple above-water 21-in. torpedo tubes.

BRITISH AND FOREIGN
ORDNANCE TABLES.

VICKERS' GUNS AND MOUNTINGS.

NAVAL GUNS AND MOUNTINGS.

	37-mm. 1-pdr. auto. 30 cal.	37-mm. 1½-pdr. auto. 42·5 cal.	40-mm. 2-pdr. auto. 40 cal.	47-mm. 3-pdr. semi-auto. 50 cal.	57-mm. 6-pdr. semi-auto. 50 cal.	3-in. semi-auto. 50 cal.	4-in. semi-auto. 40 cal.	4-in. semi-auto. 45 cal.	101·6-mm. 4-in. 50 cal.	120-mm. 4·7-in. 45 cal.	120-mm. 4·7-in. 50 cal.	152-mm. 6-in. 45 cal.
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore . ins.	1·457	1·457	1·575	1·85	2·244	3	4	4	4	4·724	4·724	6
Length of bore . ins.	43·5	62	62	92·5	112·2	150	160	180	200	212·58	236·2	270
Length of gun . ins.	73·75	94	95·7	98·9	118·6	157	166·6	187·8	207·3	219·784	243·4	279·728
Weight of gun	432 lb.	490 lb.	616 lb.	6 cwts.	c. q. 9 1	c. q. 19 0	c. q. 25 0	c. q. 36 0	c. q. 40 0	t. c. 3 2	t. c. 3 4	t. c. 6 10
Weight of projectile . lbs.	1	1·5	2	3·3	6	12·5	31	31	31	48·5	50	100
Muzzle velocity . f.s.	1,800	2,100	2,000	2,800	2,600	2,700	2,300	2,700	3,000	2,789	2,900	2,850
Muzzle energy . f.t.	22·5	46	55·5	180	280	630	1,135	1,565	1,935	2,616	2,916	5,630
Penetration of W.I. plate at muzzle, Gavre formula. Uncapped projectile . ins.	—	—	—	6·7	7·5	·65	10·8	13·6	16	16·6	17·8	22
Rounds per minute	200	200	200	30	28	25	20	18	15	12	12	10
Weight of mounting and shield	—	—	1,040 lb.	c. q. lb. 11 2 5	c. q. lb. 17 3 10	t. c. q. lb. 1 3 1 10	t. c. q. lb. 2 9 3 24	t. c. q. lb. 2 18 3 0	t. c. q. lb. 3 5 0 27	t. c. q. 3 5 2	t. c. q. 4 1 0	t. c. q. l. 12 9 2 3
Angle of elevation . deg.	—	—	80°	20°	20°	20°	30°	30°	30°	35°	35°	30°
Angle of depression . deg.	—	—	5°	10°	10°	10°	10°	10°	10°	10°	10°	5°
Weight of shield	—	—	—	c. q. lb. 1 0 20	c. q. lb. 1 2 10	c. q. lb. 2 0 14	c. q. lb. 7 2 0	c. q. lb. 7 2 0	c. q. lb. 14 1 13	c. q. lb. 9 0 0	—	t. c. q. lb. 4 4 3 16
Thickness of shield	—	—	—	·22	·25	·25	·144	·144	·25	·144	—	1·5 and 1

NAVAL HOWITZERS.

	152-mm. 6-in. 50 cal.	152-mm. 6-in. semi-auto. 50 cal.	20·3-mm. 8-in. 50 cal.	203-mm. 8-in. 55 cal.	254-mm. 10-in. 45 cal.	254-mm. 10-in. 50 cal.	305-mm. 12-in. 45 cal.	305-mm. 12-in. 50 cal.	343-mm. 13·5-in. 45 cal.	356-mm. 14-in. 45 cal.	356-mm. 14-in. 50 cal.	381·mm. 15-in. 45 cal.	406-mm. 16-in. 45 cal.	120-mm. 4·7-in. How. 18 cal.	280-mm 11-in. How. 8 cal.
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore . ins.	6	6	8	8	10	10	12	12	13·5	14	14	15	16	4·724	11
Length of bore . ins.	300	300	400	440	450	500	540	600	607·5	630	700	675	720	85	88
Length of gun . ins.	309·728	311·17	413·1	453·1	464	514	556·5	616·5	625·9	648·4	718·4	695·7	742·2	89·9	96·6
Weight of gun	t. c. 6 18	t. c. 8 5	t. c. 15 0	t. c. 16 10	t. c. 23 10	t. c. 26 1	t. c. 40 0	t. c. 48 10	t. c. 66 0	t. c. 73 0	t. c. 80 0	t. c. 87 0	t. c. 105 0	c. q. 11 1	t. c. 1 18
Weight of projectile	100	100	256	256	500	500	850	850	1,400	1,350	1,350	1,660	2,000	45	350
Muzzle velocity . f.s.	3,000	2,900	3,000	3,150	2,800	2,938	2,800	2,933	2,500	2,756	2,900	2,700	2,650	1,200	585
Muzzle energy . f.t.	6,240	5,830	15,976	17,615	27,180	29,825	46,210	50,705	60,675	71,100	78,725	83,915	97,390	450	830
Penetration of W.I. plate at muzzle, Gavre formula. Uncapped projectile . ins.	23·7	22·6	34·5	38	39·2	41·7	47·3	50·3	51·5	54·5	58·3	57	59	—	—
Rounds per minute	10	10	6	6	3	3	2	2	1·5	1·35	1·35	1·2	1·2	12	—
Weight of mounting and shield	t. c. q. lb. 12 1 0 0	t. c. q. lb. 14 0 1 24	—	—	—	—	—	—	—	—	—	—	—	t. c. q. lb. 3 17 0 11	—
Angle of elevation . deg.	35°	30°	—	—	—	—	—	—	—	—	—	—	—	70°	—
Angle of depression . deg.	10°	7°	—	—	—	—	—	—	—	—	—	—	—	5°	—
Weight of shield	t. c. q. lb. 3 4 0 0	t. c. q. lb. 5 5 1 15	—	—	—	—	—	—	—	—	—	—	—	t. c. q. lb. 1 19 1 14	—
Thickness of shield	·625 and ·375	3 to 1·2	—	—	—	—	—	—	—	—	—	—	—	1·9 and ·5	—

The above guns are of all-steel construction. Guns of steel and wire construction are manufactured having approximately the same characteristics.

Vickers' Howitzers and Field Guns.

	75-mm. 2·953-in. Field. 28 cals.	84-mm. 3·3-in. Field. 28 cals.	90-mm. 3·543-in. Field. 29 cals.	10·5-cm. 4·134-in. Howr. 20 cals.	10·5-cm. 4·134-in. Field. 28 cals.	10·5-cm. 4·134-in. Field. 45 cals.	5-in. Field. 41 cals.	15-cm. 5·9-in. Howr. 21·5 cals.	20·3-cm. 8-in. Howr. 14 cals.	9·2-in. Siege Howr. 17·2 cals.	12-in. Siege Howr. 17·3 cals.
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore . ins.	2·953	3·3	3·543	4·134	4·134	4·134	5	5·906	8	9·2	12
Length of bore . ins.	82·68	92·735	102·75	82·68	115·75	186·03	205	127	112	159·16	207·6
Length of gun . ins.	86·48	96·96	108·2	88·48	121·95	192·53	212·25	135·15	122·1	170·5	222·3
	c. q.	c. q.	c. q.	c. q.	c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.
Weight of gun	7 0	9 1	9 3	9 1	17 2	1 13 0	2 11 2	1 19 2	2 18 0	4 5 2	9 2 2
Weight of projectile . lb.	14·33	18·5	22·05	30·9	30·9	35·27	56	90·4	220·5	290	750
Muzzle velocity . f.s.	1,920	2,100	2,100	1,560	2,000	2,740	2,700	1,790	1,476	1,520	1,520
Muzzle energy . f.t.	366	565	675	521	856	1,840	2,831	2,010	3,330	4,645	12,015
Rounds per minute	24	24	12	10	10	8	6	4	2	2	1
	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.
Weight of mounting complete with shield	18 0 0	20 3 0	23 1 0	22 0 6	38 2 0	2 15 2	4 10 0	2 16 2	5 3 0	11 15 0	28 7 2
Weight of shield	1 3 14	1 3 26	2 0 16	1 2 0	3 0 0	3 2	—	—	—	—	—
Thickness of shield . ins.	·125	·125	·128	·144	·144	4 mm.	—	—	—	—	—
Angle of elevation . deg.	40°	40°	40°	45°	40°	43°	50°	42°	60°	50°	65°
Angle of depression . deg.	5°	5°	5°	5°	5°	0°	5°	0°	0°	0°	0°

	Tank Guns.			Mountain Howitzers.		Landing.
	57-mm. 6-pdr. Semi-Auto. 27 cals.	47-mm. 3-pdr. Semi-Auto. 35 cals.	40-mm. 2-pdr. Semi-Auto. 37 cals.	75-mm. 2·953-in. Jointed. 17 cals.	105-mm. 4·134-in. Jointed. 11 cals.	76·2 mm. 3-in. 22 cals.
Construction	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore . ins.	2·244	1·85	1·575	2·953	4·134	3
Length of bore . ins.	60·6	64·75	58·27	50·2	45·474	66
Length of gun . ins.	64	68·15	60·47	53·6	51·274	70·34
	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.
Weight of gun	2 2 14	2 2 0	1 2 0	3 1 0	5 1 14	3 3 4
Weight of projectile . lb.	6	3·3	2	14·33	26·45	12·5
Muzzle velocity . f.s.	1,200	1,854	2,000	1,312	1,200	1,640
Muzzle energy . f.t.	60	79	55·5	171	264	233
Rounds per minute	—	—	—	18	10	25
	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.
Weight of mounting complete with shield	2 2 0	2 2 0	—	11 3 16	11 2 14	9 2 0
Weight of shield	—	—	—	1 0 12	1 1 10	1 1 15
Thickness of shield . ins.	—	—	—	·144	·144	·192
Angle of elevation . deg.	30°	30°	—	50°	40°	23°
Angle of depression . deg.	10°	10°	—	10°	0°	10°

Guns Mounted on Aircraft.

	·303 Auto. Observer's Gun. 79·2 cal.	·303-in. Auto. Pilot's Gun. 93·7 cal.	·5-in. Auto. Pilot's Gun. 60 cal.	1-in. Auto. 30 cal.	37-mm. 1-pdr. Auto. 22 cal.	40 mm. 2-pdr. Semi-Auto. 40 cal.	57-mm. 6-pdr Q.-F. 25 cal.
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore . . . ins.	·303	·303	·5	1	1·457	1·575	2·244
Length of bore . . . ins.	24	28·4	30	30	32·05	63	56·1
Length of gun . . . ins.	40	40·5	45	55	59·7	65·25	59·5
Weight of gun . . . lb.	22	30	52	110	150	234	284
Weight of projectile . . . lb.	174 grs.	174 grs.	550 grs.	·441	1	2	6
Muzzle velocity . . . f.s.	2,300	2,400	2,635	1,542	1,200	2,300	1,200
Muzzle energy . . . f.t.	·9	1	3·75	7·25	10	73	60
Rounds per minute	500 to 600	500 to 1,000	400 to 600	150	150	—	—
Weight of mounting . . . lb.	—	—	—	60	142	432	185
Angle of elevation . . . deg.	—	—	—	40°	60°	60°	60°
Angle of depression . . . deg.	—	—	—	90°	60°	30°	90°

Anti-Aircraft Guns.

	·303-in. Auto. 93·7 cal.	·5-inch Auto. 90 cal.	1-in. Auto. 40 cal.	40-mm. 2-pdr. Auto. 40 cal.	40-mm. 2·2-pdr. Auto. 50 cal.	40-mm. 2·2-pdr. Semi-Auto. 50 cal.	47-mm. 3-pdr. Semi-Auto. 50 cal.	3-in. Q.-F. 45 cal.	3-in. Semi-Auto. 50 cal.	3-in. Semi-Auto. 38 cal.	4-in. Semi-Auto. 45 cal.	4 in. Semi-Auto. 50 cal.	4·7-in. Semi-Auto. 40 cal.
Construction . . .	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore ins.	·303	·5	1	1·575	1·575	1·575	1·85	3	3	3	4	4	4·724
Length of bore . ins.	28·4	45	40	62	78·75	78·75	92·5	135	150	114·45	180	200	188·96
Length of gun . ins.	43	66·7	64·1	95·7	133·0	81	98·9	143·1	157·6	122·45	187·8	208	197
Weight of gun . . .	32 lb.	80 lb.	187 lb.	616 lb.	900 lb.	c. q. lb. 2 0 17	c. q. lb. 6 0 0	c. q. lb. 18 1 0	t. c. q. 1 2 0	c. q. lb. 9 1 0	t. c. q. 1 18 3	t. c. q. 2 0 0	t. c. q. 3 1 0
Weight of projectile lb.	174 grs.	770 grs.	·551	2	2·205	2·205	3·3	12·5	14·33	16	31	31	48·5
Muzzle velocity . f.s.	2,400	2,725	2,000	2,000	2,625	2,625	2,800	2,600	2,560	2,050	2,700	2,850	2,560
Muzzle energy . . f.t.	1	5·65	15·5	55·5	105	105	180	586	650	466	1,565	1,740	2,205
Rounds per minute .	500-600	300–400	250	200	100	35	30	20	25	25	18	18	12
Weight of mounting .	38 lb.	109 lb.	379 lb.	c. q. lb. 10 3 12	c. q. lb. 14 1 15	c. q. 12 3	c. q. lb. 18 2 3	t. c. q. lb. 1 19 3 9	t. c. q. 2 7 3	c. q. 17 3	t. c. q. lb. 6 4 0 18	t. c. q. lb. 6 12 0 0	t. c. q. lb. 9 0 1 0
Angle of elevation deg.	80°	90°	80°	80°	85°	90°	80°	90°	90°	85°	90°	90°	90°
Angle of depression deg.	20°	10°	10°	5°	5°	0°	5°	5°	5°	5°	5°	5°	5°

INFANTRY GUNS.

		44–60 mm.			47 mm.		
		44 mm. Barrel.		60 mm. Barrel.	Armour-Piercing Ammunition.		High-Explosive Ammunition.
		30 cal.		20 cal.		20 cal.	
Construction		Steel		Steel		Steel	
Diameter of bore	ins.	1·73		2·36		1·85	
Length of bore	ins.	52		47·24		37	
Length of gun	ins.	55·5		50·74		40·5	
		Barrel.	Breech ring.	Breech mechanism.	Barrel.	Breech ring.	Breech mechanism.
Weight of gun		75 lb.	50 lb..	26 lb.	78 lb.	55 lb.	31 lb.
Weight of projectile	lb.	2·75		5·5	3·3		3·3
Muzzle velocity	f.s.	1,706		656	1,600		656
Muzzle energy	f.t.	55·5		17·9	58·6		9·85
Weight of mounting complete with shield			326 lb.			346 lb.	
Weight of shield			—			45 lb.	
Thickness of shield			—			3·5 mm.	
		44 mm. barrel		60 mm. barrel.	Low position.		High position.
Angle of elevation	deg.	10°		20° to 60°	15°		9° to 45°
Angle of depression	deg.	5°		0°	6°		0°

ELSWICK B.L. AND Q.F. NAVAL GUNS.

This Table is supplied by the Manufacturers.

ABBREVIATIONS: N. = Naval. A.A. = Anti-Aircraft. N.L. = Naval Landing.

	N. or A.A.	N. or A.A.	N. or A.A.	Naval or Anti-Aircraft.					N.L.	A.A. or N.	A.A. or N.	N.L.	A.A. or N.	A.A. or N.	N.	A.A. or N.	A.A. or N.	N.	N.	N. or A.A.	N.
Diameter of Bore ....ins.	0·5	1·457	0·9	1·85	1·85	1·85	2·24	2·24	3	3	3	3	3·5	4	4	4	4·7	4·7	4·7	5	5
do. do. ....mm.	12·7	37	22·86	47	47	47	57	57	76	76·2	76·2	76·2	88·9	101·6	102	102	120	120	120	127·2	127·2
Length of Bore ....cals.	..	40	66	40	46	55	40	50	18·8	45	50	23	45	45	50	40	45	50	40	45	50
	lb.	lb.	lb.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	tons	tons
Weight of Gun	82	230	230	4·51	5·0	7·5	7·5	10·5	4	13¾	19	5¼	21¼	40	42	24¾	53	66	44	4·05	3·85
do. do. ....kilos.	37·2	104	104	230	254	381	381	533	203	673	978	226·7	1100	2032	2134	1264	2692	3353	2235	4114	3912
do. Projectile ....lbs.	0·115	1·5	6 oz.	3·3	3·3	3·3	6	6	12·5	12·5	12·5	12·5	20	31	31	31	45	45	45	60	60
do. do. ......kilos.	0·052	0·681	0·17	1·5	1·5	1·5	2·722	2·722	5·67	5·67	5·67	5·67	9·07	14·06	14·06	14·06	20·41	20·41	20·4	27·2	27·2
	oz.	oz.	oz.	oz.	oz.	lb. oz.	oz.	lb. oz.	oz.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb. oz.	lb.	lb.	lb.	lb.
do. Charge, M.D. Cordite	0·549	2¼	1¼	8·25	10·0	1 6	10	1 2·5	15	2·625	4 1	1·0	5·0	7·875	10·5	5·0	9 11	14	9	16	21
do. do. do. kilos.	..	0·071	0·042	0·234	0·283	0·635	0·283	0·525	0·369	1·19	1·86	0·45	2·268	3·57	4·76	2·27	4·395	6·35	4·08	7·25	9·5
Muzzle Velocity ....f.s.	2580	2000	2800	2132	2300	3000	1968	2400	1585	2600	3000	1640	2650	2625	3000	2300	2600	3000	2500	2700	3000
do. do. ......m.s.	786	609	853	650	701	914	600	731	483	792	914	500	807·7	800	914	701	792	914	762	823	914
Muzzle Energy ....f.t.	5·3	41·6	20·4	104	121	206	161	240	213	586	780	233	974	1480	1934	1137	2109	2808	1950	3032	3744
do. do. ....m.t.	1·64	12·8	6·3	32·2	37·5	64	49·8	74·3	66	181	242	72	302	459	599	352	653	869·6	604	939	1160
Penetration at Muzzle ...ins.	2·2	3·4	3·6	5·15	5·8	8·6	5·4	7·3	..	10·8	12·5	5·1	12·4	14·5	17·4	11·6	15·6	19·3	14·7	18·4	21·5
(Tressider Wrought Iron Pl.)																					
do. do. ...mm.	55·8	86·3	91·4	130·8	147·3	218·4	137·2	185·4	..	261	317	129·5	315	370	442·0	294·6	396·2	490·2	373	724	546
Rounds per Minute	500	70	80	25	30	30	25	30	20	20	20	15	20	20	12	20	12	12	12	10	10

	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.	N.
Diameter of Bore ....ins.	5·5	6	6	7·5	7·5	8	8	8	9·2	9·2	10	10	12†	12†	13·5	14†	15	15	16	18
do. do. ....mm.	139·7	152	152	190	190	203	203	203	234	234	254	254	305	305	343	355·6	381	381	406	457
Length of Bore ....cals.	50	45	50	45	50	45	50	50	45	50	45	50	45	50	45	45	40	45	45	40
	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons
Weight of Gun	5·65	8·4	8·75	13·8	15·75	18·0	13·15	17	26·75	28·82	36·25	38·25	59·3	66·7	76	85	85	98·6	83	152
do. do. ....kilos.	5740	8535	8890	14021	16003	18289	13360	17300	27179	29289	36832	38864	60252	67770	77216	86364	86364	96118	84332	154440
do. Projectile ....lbs.	83	100	100	200	200	250	253·5	250	380	380	500	500	850	850	1250	1400	1920	1925	2180	3320
do. do. ......kilos.	37·6	45·36	45·36	90·72	90·72	113·4	115	113·4	172·37	172·37	226·8	226·8	385·55	385·55	567	635	871	873·2	966	1506
	lb.	lb.	lb.	lb.	lb.	lb.	lbs.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
do. Charge, M.D. Cordite	25·0	31	33·0	74	76	75	81	83	122	136	167	200	260	285	296	324	380	400	580	690
do. do. do. kilos.	11·34	14·061	15·0	33·566	34·473	34	36·7	37·6	55·34	61·7	75·75	90·72	117·93	129·3	134·26	147	172·3	181	263	313
Muzzle Velocity ....f.s.	2900	2800	3000	2900	3000	2845	2900	3000	2750	3000	2800	3000	2800	3000	2700	2700	2362	2500	2680	2400
do. do. ....m.s.	864	853	914	884	914	867	884	914	838	914	853	914	853	914	823	823	720	762	801·6	731
Muzzle Energy ....f.t.	4840	5436	6240	11663	12481	14031	14780	15600	19926	23714	27181	31203	46208	53046	68187	70770	74275	83425	102160	132600
do. do. ....m.t.	1499	1683·4	1932	3611·9	3865·2	4345·2	5414	4831·2	6171	7340	8418	9663	14310	16428	19568	21916	23002	25835	31670	41065
Penetration at Muzzle ...ins.	25·8	22·9	25·5	30·6	32·3	32·2	33·5	34·9	35·2	40·1	39·7	44·1	47·3	52·5	51·3	53·2	49·1	53·7	58	60
(Tressider Wrought Iron Pl.)																				
do. do. ...mm.	701·0	581·6	647·7	777·2	820·4	817·9	851	886·4	894·1	1018·5	1008·4	1120·1	1201·4	1333·5	1363·0	1351·3	1247	1364	1473	1524
Rounds per Minute	10	9	9	6	6	5	5	5	4	4	3	3	2	2	2	2	2	2	2	2

Corrected to September, 1926.

* These guns can be used on Railway Truck Mountings.

ELSWICK LAND AND AIR SERVICE GUNS AND HOWITZERS.

Calibre ins.	Calibre mm.	Length of Bore calibres	Weight of Gun	Weight of Gun kilos.	Type of Breech Mechanism	System of Obturation	Muzzle Velocity ft.-secs.	Muzzle Velocity metre-secs.	Weight of Projectile lbs.	Weight of Projectile kilos.	Rounds per Minute	Type of Mounting	Weight of Carriage or Mounting	Weight of Carriage or Mounting kilos.	Maximum Elevation	Depression
0·5	12·7	..	lbs. 82	37·2	Auto	Cart.	2580	786	0 115	0·052	500	Tripod	70 lbs.		75°	35°
0·9	22·8	56	lbs. 222	101	Auto Block	C. Case	2800	853	6 ozs.	0·17	90	Air Service or Tanks	To Suit Aircraft			
1·457	37	..	lbs. 175	79·4	Auto	C. Case	2300	701	1·25	0·567	350	Aircraft, Tanks, Infantry	120 lbs.		80°	35°
1·457	37	45	lbs. 412	187	Auto Block	C. Case	2000	610	1½	0·68	80	Air Service Automatic	To Suit Aircraft			
1·457	37	..	lbs. 33	15	Block	C. Case	1400	427	1·5	0·68	20	Infantry Gun	6 loads 33 lbs. each	15	15°	0°
1·575	40	25	lbs. 102	46	Semi-Auto	C. Case	1474	449	2	0·91	30	Tank	cwt. 3½	178	20°	15°
1·85	47	..	lbs. 83	37·65	Block	C. Case	1200	366	3·3	1·5	20	Infantry Gun	10 loads		75°	0°
2·244	57	23	cwts. 5	254	Semi-Auto	C. Case	1580	481	6	2·72	25	Tank	cwt. 7	355	20°	15°
2·244	57	20·4	lbs. 350	159	Revolver Type	Bare Charges	1000	304	6	2·72	25	Aeroplane Guns Non-recoil	lbs. 24	11	40°	40°
2·244	57	50	cwts. 8	406	Block	C. Case	2800	853	6	2·72	25	Armoured Car or train	cwts. 14·55	740	80°	10°
2·75	70	26·5	lbs. 400	182	Screw	De Bange	1200	365	12·5	5·67	25	Mountain Gun Jointed on Field Carriage	cwt. 8	406	15°	15°
2·75	70	..	lbs. 92	41·7	Block	C. Case	850	259	10	4·53	15	Infantry Gun Field & French Howitzer	9 loads max. 100lbs.	45	65°	0°
2·78	70·6	..	lbs. 280	127	Screw	De Bange	317	96·5	100	45·36	..	Trench Stick Bomb Thrower	cwts. 9·5	843	45°–70°	0°
2·953	75	15·2	lbs. 260	118	Screw	C. Case	1310	399	12·5	5·67	25	Mountain Gun Diff-recoil	cwt. 7	358	40°	10°
2·953	75	33	cwts. 9	457	Block	C. Case	1950	594	14·8	6·5	20	Field	cwts. 19·5	990	40°	5°
2·953	75	17	cwts. 2½	130	Block	C. Case	1550	472	12·5	5·67	20	Mountain	cwts. 11·95	607	35°	5°
2·953	75	28·4	cwts. 5	254	Block	C. Case	1750	533	14·3	6·5	20	Light Cavalry.	cwts. 19	965	40°	5°
3	76·2	31	cwts. 9·25	469	Screw	C. Case	2000	609	12·5	5·67	20	Anti-aircraft on Motor Lorry	tons 1·2	1220	80°	0°
3	76·2	28	cwts. 7·25	368	Block	C. Case	1750	533	14·3	6·48	20	Field	cwt. 15	765	16°	5°
3	76·2	23	cwts. 6	305	Block	C. Case	1700	518	12·5	5·67	20	Horse and Field	cwts. 13¼	673	16°	5°
3	76·2	45	cwts. 15	762	Block	C. Case	2600	792	12·5	5·6	20	Anti-aircraft	tons 1·85	1867	90°	10°
3	76·2	23	cwts. 5·25	266	Screw	C. Case	1640	500	12·5	5·67	20	Naval Landing	cwt. 9·75	500	15°	
3·3	83·8	35	cwts. 14¾	750	Block	C. Case	1900	579	20¼	9·25	20	Field	cwt. 20·5	1041	40°	5°
3·3	83·8	28	cwts. 5	254	Block	C. Case	1700	518	18½	8·39	20	Field	cwt. 20·1	1020	40°	5°
3·3	83·8	33	cwts. 8½	432	Block	C. Case	1800	548	18½	8·39	20	Field	cwt. 19·5	990	40°	5°

Calibre ins.	Calibre mm.	Length of Bore calibres	Weight of Gun	Weight of Gun kilos.	Type of Breech Mechanism	System of Obturation	Muzzle Velocity ft.-secs.	Muzzle Velocity metre-secs.	Weight of Projectile lbs.	Weight of Projectile kilos.	Rounds per Minute	Type of Mounting	Weight of Carriage or Mounting	Weight of Carriage or Mounting kilos.	Maximum Elevation	Depression
4	101·6	45	tons 2·0	2030	Screw	C. Case	2600	792	31	14·06	15	Anti-Aircraft	tons 4·55	4648	90°	10°
4·134	105	45	tons 1·85	1880	Screw	DeBange	2650	808	35·27	16	15	Anti-Aircraft	tons 3¼	3302	90°	10°
4·134	105	22	tons 0·5	506	Block	C. Case	1700	518	31	14·06	15	Field Howitzer	cwts. 20·9	1066	45°	5°
4·5	114·3	20	cwts. 10	508	Screw	De Bange	1450	442	35	15·87	12	Field Howitzer	cwts. 19·2	984	50°	5°
4·7	120	12·0	cwts. 8	397	Block	C. Case	1156	350	35	15·87	15	Field Howitzer	cwts. 17·3	882	50°	5°
4·724	120	45	tons 2½	2566	Screw	DeBange	2650	808	48·5	22	12	Field	tons 2·3	2337	40°	5°
5	127	8·4	tons 2	2032	Screw	De Bange	2150	655	60	27·21	10	Position Gun Field Carriage	tons 3·25	3300	20°	5°
6	152	45	tons 7·45	7525	Screw	De Bange	2800	854	100	45·4	8	Field Carriage	tons 5·5	5605	20°	5°
6	152	12·2	ton 1	1016	Block	C. Case	1000	305	100	45·36	9	Howitzer	..	..	..	..
6	152	50	tons 8·7	8840	Screw	De Bange	3000	914	100	45·36	7	Railway Truck	tons 10	10160	40°	0°
6·102	155	21	tons 1·67	1695	Screw	DeBange	1700	518	94·8	43	9	Howitzer	tons 2½	2540	45°	6°
8	203	15	tons 2·9	2946	Screw	De Bange	1300	396	200	90·72	6	Howitzer Railway Truck	tons 24·6	25000	45°	0°
9·2	234	13·2	tons 3·4	3454	Screw	De Bange	1190	362	290	131·54	4	Howitzer Field Carriage	tons 5·35	5435	45°	0°
9·2	234	21	tons 6 125	6220	Screw	DeBange	1700	518	290	131·5	4	Howitzer	tons 5½	5600	45°	5°
9·2	234	35	tons 24·2	22774	Screw	De Bange	2300	701	380	172·36	4	Railway Truck	tons 65·5	66550	40°	0°
9·45	240	..	cwts. 11·25	553	Screw	C. Case	444	135	170	77·11	..	Trench Bomb Thrower	tons 3·9	3960	20°–45°	0°
11	279·4	5·3	cwts. 18·2	670	Screw	De Bange	400	122	200	96·72	3	Trench Mortar	tons 2·8	2845	45°–80°	0°
12	305	17·3	tons 11·25	11430	Screw	De Bange	1450	442	750	340·2	2	Howitzer Railway Truck	tons 49·5	50300	65°	2°
12	305	25	tons 14¾	14987	Screw	DeBange	1800	548	750	340·2	3	Howitzers				
14	355·6	45	tons 83·25	84585	Screw	De Bange	2500	762	1586	719·4	2	Railway Truck	tons 163·75	166380	40°	0°
18	457·2	34·7	tons 85·7	87075	Screw	De Bange	1900	579	2500	1134	2	Howitzer Railway Truck	tons 163·75	166380	..	..

Corrected to September, 1926.

BEARDMORE GUNS AND HOWITZERS.

(This Table is supplied by the Manufacturers.)

	Naval.														
Calibre .. .. ins.	4	4	4·724	5·5	5·5	6	6	7·5	8	8	9·2	12	13·5	15	16
,, ... mm.	101·6	101·6	120	140	140	152·4	152·4	190	203·2	203·2	234	305	343	381	406
Length of bore .. .. calibres	50	55	45	50	55	50	55	45	50	55	50	50	46	45	45
Weight of Gun .. .. tons	2·15	2·45	3·2	5·5	5·9	7·9	8·35	13·9	17·5	19·25	29	66	77	96	107
,, ,, ... kilos.	2,184	2,489	3,251	5,588	5,994	8,026	8,484	14,122	17,780	18,542	24,402	67,056	78,232	97,536	108,712
Weight of Projectile .. .. lbs.	31	31	45	82	82	100	100	200	250	250	425	950	1,350	1,850	2,100
,, ,, .. kilos.	14·06	14·06	20·4	37·2	37·2	45·36	45·36	90·72	114·2	114·2	192·8	430·9	612·4	839·2	952·5
Muzzle Velocity .. .. f.s.	2,920	3,000	2,754	2,900	3,000	2,950	3,025	2,750	2,900	3,000	2,825	2,825	2,650	2,620	2,675
,, ,, ... m.s.	890	914	838	884	914	899	921	838	884	914	861	861	808	799	815
Muzzle Energy .. .. .. f.t.	1,833	1,935	2,360	4,782	5,117	6,034	6,345	10,488	14,579	15,602	23,518	52,571	63,738	88,056	104,198
,, ,, ... m.t.	568	599	731	1,481	1,584	1,869	1,965	3,248	4,515	4,832	7,283	16,280	20,441	27,270	32,270

	Anti-Aircraft.							Tank Guns.	
	Mobile.			Fixed.					
Calibre .. .. ins.	2·95	3·0	3·3	3·0		4·0	4·0	1·85	2·24
,, ... mm.	75	76·2	84·0	76·2		101·6	101·6	47	57
Length of Bore .. .. calibres	43	40	42·5	55		45	55	30·0	23
Weight of Gun	0·65 ton	0·6375 ton	1·1 tons	1·125 tons		1·925 tons	2·45 tons	1·8 cwts.	5·6 cwts.
,, ,, ... kilos.	660	648	1,118	1,143		1,956	2,489	90·7	284
Weight of Projectile .. .. lbs.	15	16	21	12·5	16	31	25	3·25	6
,, ,, .. kilos.	6·8	7·26	9·53	5·67	7·26	14·06	11·34	1·49	2·72
Muzzle Velocity .. .. f.s.	2,100	2,100	2,300	3,000	2,620	2,550	3,200	1,750	1,525
,, ,, ... m.s.	640	640	701	914	799	777	975	533	465
Muzzle Energy .. .. .. f.t.	459	489	770	780	762	1,398	1,775	69	96·7
,, ,, ... m.t.	142	151·5	238	241	236	443	550	21·6	30

	Howitzers and Field Guns.										
	Light F.	Light F.	Light H.	F.	H.	H.	F.	H.	H.	Mountain H.	
Calibre .. .. ins.	1·85	1·575	2·24	3·3	4·724	6	6	8	9·2	3·3	
,, ... mm.	47	40	57	84	120	152·4	152·4	203·2	234	84	
Length of Bore .. .. calibres	28·5	37	24	31	20	13	35	17	17	12·25	
	cwts.	cwts.	cwts.	cwts.	cwts.	tons	tons	tons	tons	cwts.	
Weight of Gun	1·03	0·92	0·92	8·6	8·7	1·15	3·7	3·0	4·25	4·0	
,, ,, ... kilos.	52·4	46·7	46·7	437	442	1,168	3,759	3,048	4,318	203	
Weight of Projectile .. .. lbs.	3·25	2·0	6·0	18·5	36·0	100	100	200	290	18·5	21·0
,, ,, .. kilos.	1·49	0·91	2·72	8·39	16·33	45·36	45·36	90·72	131·5	8·39	9·53
Muzzle Velocity .. .. f.s.	1,550	1,900	700	1,750	1,200	1,250	2,375	1,500	1,500	1,040	960
,, ,, ... m.s.	473	579	213·4	533	366	381	724	457	457	317	290
Muzzle Energy .. .. .. f.t.	54	50	20·4	393	359	1,083	3,911	3,120	4,524	138	134
,, ,, ... m.t.	16·7	15·5	6·3	122	111	335	1,211	956	1,401	42·7	41·5
		In same carriage.		In same carriage.			In same carriage.				

BRITISH NAVAL ORDNANCE.

GUN. Calibre. Inches.	MARK.	Length in Calibres.	Weight of Gun. tons.	Weight of Projectile. lbs.	Weight of Charge. lbs.	Muzzle Velocity. ft./sec.	Muzzle Energy. tons/ft.	CARRIED BY
16	..	..	..	..	..	..	..	Nelson and Rodney
15	I.	42	100	1920	428	2462	82,370	Royal Sovereign, Queen Elizabeth, Hood, and Repulse Classes
13·5	V.	45	76·1	1400	297	2582	57,770	King George, Iron Duke, and Tiger Classes
7·5	Semi-Automatic	50	15	200	61	2841	11,259	Hawkins Class
6	XI.	50	8·5	100	32	2937	5,980	Royal Sovereign, Queen Elizabeth, Tiger
6	VII. VIII.	45	7 4	100	29	2536	4,600	Iron Duke Class
5·5	I.	50	6·3	82	22¼	2790	4,425	Hood
4·7	I.	45	3·1	50	11½	2650	2,430	Later flotilla leaders and Destroyers,

FRENCH NAVAL ORDNANCE.

Date and Pattern of Gun.	Model 1912. (1)	Model 1906–10. (2)	Model 1906. (3)	Model 1902–06. (4)	Model 1902. (5)	Model 1893–96. (6)	Model 1893–96. (7)	Model 1893–96. (8)	Model 1910. (9)	Carried by
Desig. by Calibre, in cms.	34	30·5	30·5	24	19·4	19·4	16·4	16·4	14	(1) Bretagne Class
Calibre, in inches	13·4	12·01	12·01	9·4	7·6	7·6	6·5	6·5	5·5	(2) Jean Bart Class
Total length, in feet	..	..	..	..	..	..	..	..	..	(3) } Voltaire Class
Length of Bore, in ins.	..	..	..	..	..	..	..	..	..	(4) }
Length, in cals.	45	45	45	50	50	45	45	45	55	(5) Edgar Quinet Renan Michelet
Total weight, in tons	66	55	47	29·2	15	12·6	7·95	7·95	5·2	
Weight of Firing Charge, Armour-piercing Projectile . . . lb.	331	282	284	148	84	74·5	45·6	43·7	22·7	(6) Jules Ferry Class
Weight { Armour-piercing Projectile lb.	1190	924	960	487	199	199	121	121	80·5	(7) Renan Class
Weight { Common Shell „	..	..	..	..	..	..	..	..	..	(8) Jules Ferry Class
Muzzle Velocity, in f.-s., A.P. Projectile	2625	2560	2560	2625	3117	2789	2953	2838	2723	(9) Bretagne Class Jean Bart Class
Muzzle Energy in foot-tons	57,200	42,300	44,000	23,500	13,450	10,800	7360	6800	4180	
Perforation at Muzzle,† wrought iron, inches	48·0	43·2	44·8	36·75	33·8	28·6	26·3	24·8	20·6	
Perforation Krupp Steel, 3000 yds. inches	11·8 (9000 metres)	13·8 6000 metres	..	6·32 9000 metres	..	..	..	..	..	

† By Tressider's formula.

In the new cruisers a 15-cm. gun of a new pattern is to be mounted.

UNITED STATES NAVAL ORDNANCE.

GUN.	MARK.	Length in Calibres.	Total Length.	Capacity of Chamber in Cubic Inches.	Travel of Projectile in Inches.	Weight of Gun.	Weight of Projectile.	Weight of Charge.	Muzzle Velocity.	Muzzle Energy.	Penetration at Muzzle, Krupp Armour, using Capped Projectile.	At 3000 Yards. Remaining Velocity.	At 3000 Yards. Penetration.	At 6000 Yards. Remaining Velocity.	At 6000 Yards. Penetration.	At 9000 Yards. Remaining Velocity.	At 9000 Yards. Penetration.
			inch.			tons.	lb.	lb.	ft.-seconds.	ft.-tons.	inch.	ft.-seconds.	inch.	ft.-seconds.	inch.	ft.-seconds.	inch.
3-in. S.A.	V., VI.†	50	159	219	128·3	1·0	18	3·85	2700	658	3·8	1230	1·2	848	0·8	..	..
4-in. R.F.G.	III., IV., V., VI.	40	164	331	134·5	1·5	33	4·85	2000	915	3·4	1156	1·7	897	1·2	..	..
4-in. R.F.G.	VII.	50	205	652	168·3	2·6	33	9·0	2500	1,430	4·6	1432	2·2	979	1·4	853	1·2
4-in. R.F.G.	VIII.‡	50	205	652	168·3	2·9	33	12·3	2800	1,794	5·3	1627	2·6	1033	1·5	878	1·2
5-in. R.F.G.	II., III., IV.	40	206	656	167·8	3·1	50	10·0	2300	1,845	5·8	1286	2·6	934	1·7	829	1·4
5-in. B.L.R.	V., VI.	50	256	1,200	215·6	4·6	60	19·2	2700	3,032	6·2	1692	3·5	1102	2·0	928	1·6
5-in. B.L.R.	VI.	50	256	1,200	215·6	4·6	50[1]	20·5	3000	3,122	6·4	1732	3·2	1057	1·7	877	1·4
5-in. R.F.G.	VII.§	51	261	1,135	215·6	5·0	50	23·8	3150	3,439	6·8	1835	3·4	1091	1·8	895	1·4
6-in. R.F.G.	II., III.	30	196	1,318	145·4	4·8	105	18·8	1950	2,768	5·3	1305	3·2	1009	2·8	909	2·0
6-in. R.F.G.	IV., VII.	40	256	1,320	205·8	6·0	105	18·8	2150	3,365	6·0	1440	3·6	1058	2·4	934	2·1
6-in. R.F.G.	IX.	45	270	1,320	221·7	7·0	105	18·8	2250	3,685	6·8	1511	3·8	1086	2·5	948	2·1
6-in. B.L.R.	VI.	50	300	2,101	247·5	8·3	105	30·0	2600	4,920	8·0	1770	4·7	1207	2·9	996	2·2
6-in. B.L.R.	VIII.	50	300	2,101	247·5	8·6	105	37·0	2800	5,707	8·3	1923	5·2	1297	3·2	1026	2·3
7-in. B.L.R.	II.	45	323	3,648	259·8	12·7	165	58·0	2700	8,338	9·6	1948	6·4	1382	4·2	1083	3·0
8-in. B.L.R.	III., IV.	35	305	3,170	245·8	13·1	260	43·8	2100	7,948	8·6	1576	6·0	1206	4·2	1040	3·6
8-in. B.L.R.	V.	40	343	5,243	273·1	18·1	260	78·0	2500	11,264	10·6	1898	7·5	1428	5·3	1141	4·0
8-in. B.L.R.	VI.	45	369	5,243	299·1	18·7	260	98·5	2750	13,360	12·0	2106	8·6	1589	6·1	1227	4·4
10-in. B.L.R.	I., II.	30	329	6,779	251·1	25·1	510	90·0	2000	14,141	10·7	1590	8·0	1274	6·1	1108	5·0
10-in. B.L.R.	III.	40	413	10,222	327·0	34·6	510	207·5	2700	25,772	15·6	2184	11·9	1747	9·0	1406	6·9
12-in. B.L.R.	I., II.	35	441	11,991	345·2	45·3	870	160·0	2100	26,596	14·2	1733	11·2	1433	8·8	1219	7·2
12-in. B.L.R.	III., IV.	40	493	17,096	392·2	52·1	870	237·5	2400	34,738	16·8	1994	13·3	1649	10·5	1376	8·3
12-in. B.L.R.	III., IV.	40	493	17,096	392·2	52·1	870	305·0	2600	40,768	18·5	2171	14·8	1801	11·7	1500	9·3
12-in. B.L.R.	V.	45	553	16,974	452·0	52·9	870	305·0	2700	43,964	19·4	2259	15·5	1877	12·8	1561	9·8
12-in. B.L.R.	VI.	45	553	14,970	452·0	53·6	870	340·0	2850	48,984	20·8	2398	16·6	1991	13·8	1653	10·6
12-in. B.L.R.	VII.	50	607	14,296	506·3	56·1	870	340·0	2950	52,483	21·7	2483	17·5	2071	13·9	1719	11·0
13-in. B.L.R.	I., II.	35	479	15,068	374·9	61·4	1130	180·0	2000	31,383	15·0	1679	12·0	1414	9·7	1221	8·1
14-in. B.L.R.	I.[1]	45	642	..	..	63·6	1400	365·0	2600	65,606	39·7*	..	23·4*	..	..	..	18·0
14-in. B.L.R.	II.[2]	50	700	..	..	82·2	1400	..	2800	76,180	44·1	..	27·4	..	..	..	..
16-in. B.L.R.	..	45	..	..	..	105·0	2100		2800	98,500	45·95	..	..	..	..	..	..
16-in. B.L.R.	..	50	..	..	..	130·0	2100		2800	114,270	51·08	..	..	..	..	..	..

* De Marre formula.

[1] Pennsylvania class.

[2] New Mexico class.

† A short anti-aircraft 3-in. gun is mounted in many of the ships.

‡ There is now a 4-in. 50-cal. anti-aircraft gun.

§ All battleships from the Delaware class onward have this gun for torpedo defence.

Corrected to 1923.

ITALIAN NAVAL ORDNANCE.

Date and Pattern of Gun.	381/40 A. V. 1914 (1)	305/46 A. V. 1909 (2)	305/40 A. 1900–4 (3)	254/45 A. 1907 (4)	254/45 V. 1906 (5)	203/45 A. 1897 (6)	190/45 A. V. 1906–8 (7)	152/45 1911 (8)	120/50 A. V. 1909 (9)	120/45 A. 1913–18 (10)	102/45 A. 1917 (11)	Carried by
Desig. by Calibre, in cms.	38·1	30·5	30·5	25·4	25·4	20·3	19	15·2	12	12	10·2	(1) Monitors
Calibre, in inches	15	12	12	10	10	8	7·5	6	4·75	4·75	4	(2) Duilio Class Cavour Class Dante Alighieri
Total length, in feet	51·67	47·77	41·707	39·07	38·715	31·126	29·22	23·42	20·38	18·38	15·715	
Length of Bore, in inches	511·7	477·9	383·42	358·4	370·5	308·9	281·7	219·2	204·64	174·64	150·74	(4) S. Giorgio Class
Length, in cals.	40	46	40	45	45	45	45	45	50	45	45	(5) Pisa
Total weight, in tons	83·56	63	51·77	34·5	35·34	19·6	14·48	7·03	3·66	4·1	2·33	(7) San Giorgio Class Pisa
Weight of Firing Charge, Armour-piercing Projectile lb.	..	316	194	185	185	51·8	71	..	..	..	..	(8) Duilio Class Campania Libia
Weight { Armour-piercing Projectile lb.	1934	997	943	494	494	269	200	..	..	..	..	
Weight { Common Shell lb.	1929	884	882	490	490	256	198·5	104	48·7	48·7	30·3	(9) Cavour Class Dante Alighieri Libia Quarto
Muzzle Velocity, in f.-s., A.P. Projectile	2297	2756	2347	2789	2789	2559	2789	2723	2788	2460	2788	
Muzzle Energy in foot-tons	71,000	52,700	36,300	26,800	26,800	12,280	10,870	5400	2650	2060	1642	
Perforation at Muzzle,† wrought iron, ins.	47·4	50	38·3	39·3	39·3	28·5	28·8	..	..	..	..	
Perforation Krupp Steel, 3000 yds.	..	9·8 9000 metres	..	..	..	..	..	..	..	..	..	

† By Tressider's Formula. A. = Armstrong. V. = Vickers.

JAPANESE NAVAL ORDNANCE

Date and Pattern of Gun.	K.M. (1)	V. (2)	A. (3)	V. (4)	A. (5)	A. (6)	V. (7)	— (8)	A. (9)	Carried by
Desig. by Calibre, in cms.	40·6	35·6	20·3	15·2	15·2	15·2	15·2	14	12	(1) Mutsu Class.
Calibre, in inches	16	14	8	6	6	6	6	5·5	4·7	(2) Ise Class. Fuso Class. Kongo Class.
Total length, in feet	..	..	..	..	..	..	..	..	..	
Length of Bore, in ins.	..	..	..	..	..	..	..	..	..	(4) Kongo.
Length of Bore, in cals.	45	45	45	50	50	45	45	50	50	(5) Fuso Class. Kongo Class (except Kongo). Yahagi. Tone.
Total weight, in tons.	..	83	17·3	8	8 7	8·5	7·5	6·25	3·3	
Weight of Firing Charge, Armour-piercing Projectile lb.	..	..	..	..	..	..	..	..	..	
Weight: Armour-piercing Projectile lb.	2190	1400	250	100	100	100	100	82	45	(8) Ise Class. Mutsu Class. Kuma Class. Tenryu Class.
Weight: Common Shell ,,	..	..	..	..	..	..	..	..	..	
Muzzle Velocity, in f.-s., A.P. Projectile	2780	2526	2740	3000	3000	2130	3000	2725	2988	(9) Tone. Yodo. Mogani.
Muzzle Energy in foot-tons	118,000	62,500	13,100	6300	6300	3165	6300	4250	2810	
Perforation at Muzzle,† wrought iron, inches	65	48·2	30·5	25·5	25·5	18·3	25·5	20·8	19·2	
Perforation Krupp Steel, 3000 yds.	13·8 at 10,970 metres	..	10½	6½	6½	4½	6½	..	2½	

† By Tressider's Formula.

BETHLEHEM STEEL CO.

SHIP AND COAST-DEFENCE GUNS.

Table supplied by the Manufacturers, August, 1924.

Calibre.		Length of bore.	Weight of gun, including breech mechanism.		Weight of projectile.		At Muzzle. Velocity.		At Muzzle. Energy.		At Muzzle. Penetration of steel-plate (De Marre).		Type of Ammunition.
inches.	millimetres.	calibres.	lbs.	kgs.	lbs.	kgs.	ft. per sec.	metres per sec.	foot-tons.	metre-tons.	inches.	milli-metres.	
1·457	37	about 50	160	72·5	1·07	0·48	2,150	655	34	10·5	2·04	51·8	Fixed in cartridge case.
1·850	47	about 50	550	249·5	3·3	1·5	2,400	732	132	41	4·11	104·4	” ”
2·244	57	50	960	435·5	6·07	2·75	2,400	732	243	75	5·17	131·3	” ”
3	76	50	1950	884·5	13	5·9	2,700	823	658	204	7·71	195·8	” ”
			tons.										
4	102	50	2·6	2,642	33	15	2,800	853	1,795	557	11·61	294·9	” ”
4	102	50	2·6	2,642	30·86	14	3,000	914	1,928	597	12·22	310·4	” ”
5	127	51	5·0	5,080	50	22·7	3,150	960	3,440	1,067	14·56	369·8	Separate, with powder in bag.
6	152	45	7·0	7,112	105	47·6	2,600	792	4,926	1,523	15·47	392·9	Separate, with cartridge case.
6	152	50	8·4	8,534	105	47·6	2,800	853	5,713	1,767	17·19	436·6	Separate, with powder in bag.
6	152	53	10·1	10,260	105	47·6	3,000	914	6,559	2,028	18·97	481·8	” ” ”
7	178	45	12·7	12,900	165	74·8	2,700	823	8,348	2,584	19·11	485·4	” ” ”
7	178	50	14·5	14,730	165	74·8	2,900	884	9,631	2,982	21·16	537·5	” ” ”
8	203	45	18·6	18,900	260	118	2,800	853	14,148	4,379	24·15	613·4	” ” ”
8	203	50	22·3	22,660	260	118	2,900	884	15,177	4,703	25·38	644·6	” ” ”
9·2	234	50	30·4	30,890	380	172	2,900	884	22,181	6,856	28·66	727·9	” ” ”
10	254	45	35·4	35,970	515	234	2,800	853	28,023	8,685	30·97	786·6	” ” ”
10	254	50	43·9	44,600	515	234	2,900	884	30,061	9,327	32·56	827·0	” ” ”
12	305	45	53·8	54,660	870	395	2,800	853	47,341	14,660	37·05	941·1	” ” ”
12	305	50	57·5	58,400	870	395	2,900	884	50,783	15,745	38·95	989·3	” ” ”
14	356	45	64·6	65,650	1,400	635	2,600	792	65,687	20,317	39·69	1008·0	” ” ”
14	356	50	79·4	80,700	1,400	635	2,800	853	76,181	23,567	44·12	1121	” ” ”
15	381	45	86·5	87,880	1,700	771	2,600	792	79,763	24,668	42·35	1076	” ” ”
16	406	45	105·0	106,500	2,100	953	2,600	792	98,530	30,491	45·95	1167	” ” ”
16	406	50	128·0	130,200	2,100	953	2,800	853	114,272	35,369	51·08	1297	” ” ”
16	406	50	140·0	142,400	2,330	1,057	2,700	823	117,900	36,500	52·39	1331	” ” ”
18	457	45	150·0	152,400	3,330	1,510	2,450	747	138,734	42,979	51·71	1313	” ” ”

Guns of 4·7-in. calibre and under, equipped with the wedge-type breech mechanism, are supplied with an automatic breech-opening device, if desired.

GERMAN SHIP AND COAST GUNS.

This list of Krupp guns was corrected in September, 1921. It is preserved here as a record of the guns which were produced at Essen shortly before the war, and during its course up to the time when the provisions of the Armistice came into force. Under the Peace Treaty the delivery of German war material abroad is interdicted. The most important of the new guns were those of heavy calibres: 16 in., 18 in. and 20 in. The pre-war table showed no guns of greater length than 40 calibres below the 11 in. The Essen Company always attached the greatest importance to the endurance and performances of its heavy guns. The light cruiser Dresden, which has been laid down at Wilhelmshaven, will have 6-in. or 5·9-in. guns.

Calibre	cm.	7·5 = 2·9 in.		8·8 = 3·4 in.		10·5 = 4·1 in.		15 = 5·9 in.		21 = 8·2 in.		24 = 9·4 in.		28 = 11 in.	
Length of Bore	cals.	45	50	45	50	45	50	45	50	45	50	45	50	45	50
Length of Bore	mm.	3375	3750	3960	4400	4725	5250	6710	7455	9420	10465	10800	12000	12600	14000
Total Length	,,	3570	3945	4190	4630	5000	5525	7100	7845	9965	11010	11425	12625	13330	14730
Weight of Gun	kg.	760	780	1225	1260	2095	2140	5970	6120	14600	15440	21950	23250	34900	36900
Weight of Projectile . .	,,	5·8	5·8	9·5	9·5	16	16	46	46	125	125	190	190	300	300
Weight of Charge . . .	,,	1·84	1·84	2·97	2·97	5·05	5·05	14·4	14·4	38·8	38·8	58·3	58·3	92·7	92·7
Muzzle Velocity . . .	m/sec.	850	875	850	875	850	875	850	875	850	875	850	875	850	875
Muzzle Energy	mt.	213·5	226·5	350	371	590	625	1694	1797	4610	4880	7000	7420	11040	11700
Muzzle Penetration (Steel)	mm.	206	215	247	258	·297	310	433	452	616	642	717	747	842	878

Calibre	cm.	30·5 = 12 in.		35·56 = 14 in.		38·1 = 15 in.		40·64 = 16 in.		45·72 = 18 in.		50·8 = 20 in.	
Length of Bore	cals.	45	50	45	50	45	50	45	50	44	50	45	50
Length of Bore	mm.	13725	15250	16000	17780	17145	19050	18290	20320	20575	22860	22860	25400
Total Length	,,	14520	16045	16925	18705	18135	20040	19345	21375	21765	24050	24180	26720
Weight of Gun	kg.	45100	47700	70000	75200	86100	92500	104300	112200	148300	159500	204000	219000
Weight of Projectile . . .	,,	390	390	620	620	760	760	920	920	1310	1310	1805	1805
Weight of Charge . . .	,,	120	120	190	190	233	233	284	284	402	402	553	553
Muzzle Velocity	m/sec.	850	875	850	875	850	875	850	875	850	875	850	875
Muzzle Energy	mt.	14350	15230	22800	24200	27950	29650	33900	35950	48250	51200	66500	70500
Muzzle Penetration (Steel).	mm.	927	967	1095	1142	1177	1227	1259	1312	1428	1488	1600	1668

No gun larger than 11-in. is now mounted.

SIZE AND FIGHTING QUALITIES OF BRITISH CAPITAL SHIPS OF DIFFERENT PERIODS.

Name.	Date of Completion.	Displacement.	Side Armour.	Speed.	Total Weight of Shot in One Round.	Collective Energy at Muzzle of One Round.
		tons.	in.	knots.	lb.	foot-tons.
Warrior	1861	9,210	4½-in. wrought-iron	14½	3,800	61,476
Hercules	1868	8,680	9-in. to 6-in. wrought-iron	14	5,400	70,200
Alexandra	1877	9,490	12-in. to 6-in. wrought-iron	15	5,426	71,400
Inflexible	1881	11,880	24-in. to 16-in. wrought-iron	13	6,936	123,120
Benbow	1888	10,600	18-in. compound	16·75	4,600	135,560
Royal Sovereign	1892	14,150	18-in. and 5-in. compound	17·5	5,800	159,610
Barfleur	1894	10,500	12-in. compound	18·5	2,450	67,670
Canopus	1900	12,950	6-in. hardened steel	18·25	4,600	178,720
Prince of Wales	1902	15,000	9-in. super-hardened steel	18·25	4,600	194.400
King Edward VII.	1905	16,350	9-in. hardened steel	19	6,100	271,800
Dreadnought	1906	17,900	11-in. hardened steel	21	8,800	487,100
Neptune	1911	20,600	12-in. hardened steel	21·5	8,900	545,000
Ajax	1913	25,000	12-in. hardened steel	21·5	14,500	625,000
Queen Elizabeth	1915	27,500	13-in. hardened steel	25	15,360	638,000
Royal Sovereign	1916	25,750	13-in. hardened steel	23	15,360	638,000
Hood	1920	41,200	13-in. hardened steel	31	15,360	638,000
Nelson	Bldg.	35,000	..	..	..	..

PARTICULARS OF SUCCESSIVE LARGE BRITISH NAVAL GUNS, 1800 TO 1921.

Year.	Type.	Weight.		Length.	Calibre.	Weight of Projectile.	Weight of Charge.	Muzzle Energy.	Penetration of Wrought-iron at 1000 yards range.
		tons.	cwt.	in.	in.	lb.	lb.	ft.-tons.	in.
1800	Cast-iron smooth-bore . .	2	12	114	6·4	32	10	400	—
1842	Ditto	4	15	—	8·12	68	16	700	—
1865	Woolwich wrought-iron .	4	10	—	7	115	22	1,400	7
1870	Built-up muzzle-loader . .	38	0	200	12·50	810	200	13,900	17
1880	Ditto	80	0	321	16	1700	450	27,960	22½
1837	Built-up breech-loader . .	110	10	524	16·25	1800	960	54,390	32
1895	Wire-wound breech-loader .	46	0	445·5	12	850	—	33,940	34·6
1900	Ditto	51	0	496·5	12	850	210	36,290	35 4
1905	Ditto	58	0	558	12	850	—	47,700	46 2
1912	Ditto	76	0	626	13·5	1400	—	60,600	*50
1914 to 1920	Ditto	96	0	675	15	1920	—	84,070	*56
1921	Ditto	117	0	720	16	2240	—	93,230	*57

* At muzzle. Guns of 18-in. calibre were fitted to one cruiser during the War, but were subsequently removed and used in monitors.

NAVAL REFERENCE SECTION.

STATEMENT OF THE FIRST LORD OF THE ADMIRALTY, TO ACCOMPANY THE NAVY ESTIMATES, 1926.

THE net total of Navy Estimates for 1926 is £58,100,000.

This is a reduction of £2,400,100 below the Estimates for the current year, notwithstanding that the provision for new construction is increased from £7,235,737 to £9,083,693.

The Estimates provide for carrying on the new construction programme which was laid before Parliament in July 1925, with regard to which more detailed reference is made in the notes appended to this statement. It was originally intended that the Floating Dock for Singapore, which is included in this programme, should be provided by the reconstruction of an ex-German dock. Experience, however, has shown this to be impracticable, and a new dock is accordingly being ordered. The change will not add to the cost of new construction in 1926, and though the total cost of the new dock is more than the cost of reconstructing the ex-German dock, present indications are that the total cost of the new construction programme as a whole will be less than previously estimated.

The fact that the Estimates for next year show a reduction of £2,400,100, in spite of the large increase on new construction and other upward tendencies, is due to the important decisions which have been taken by the Board of Admiralty in the last nine months with a view to economy. Owing to these decisions, and by postponement of expenditure in certain directions, countervailing reductions have been effected, either directly or by resulting administrative economies, of upwards of £5,000,000. They were rendered possible only by the adoption of a settled programme of new construction over a period of years, and by the favourable aspect of the political horizon. But for this I should have been obliged to ask Parliament for a net total of some £63,000,000.

One of these economies, the reduction of Rosyth and Pembroke Dockyards to a care and maintenance basis, has already been considered and approved by Parliament. Others are alluded to in the accompanying notes.

As in the Estimates for the past two years, a special overhead deduction has been made in the provision for contract work in Votes 8, 9 and 10 to discount in advance possible delays in the progress of such work. If the delays do not, in fact, occur and these Estimates prove insufficient, Parliament will be asked to make good the deficiency.

W. C. BRIDGEMAN.

ADMIRALTY,
February 24, 1926.

NOTES ON MATTERS OF GENERAL INTEREST.

Distribution of the Fleet.

During the past year from motives of economy, several changes in the constitution of the various Fleets have been decided upon, the most important being the transfer of two ships of the Royal Sovereign class (H.M.S. Resolution and H.M.S. Royal Oak) to the Mediterranean Fleet in the place of the four Iron Duke class battleships; the actual change will take place on the conclusion of the combined Fleet exercises early in March, 1926. The Iron Duke class will return to home waters, and will remain in special commission as a training squadron for Boys, exercising with the Atlantic Fleet.

In view of the greater size and habitability of modern destroyers, the policy of providing depôt ships to accompany Destroyer Flotillas has been modified and the experiment is being tried of maintaining Destroyer Flotillas independent of depôt ships. As the majority of these vessels were obsolescent, they are being disposed of as follows:—

H.M.S. Greenwich has been withdrawn from the Mediterranean Station and placed in reserve at Portsmouth, the work formerly carried out by this ship being distributed between H.M.S. Sandhurst and a shore establishment. H.M.S. Dido, Hecla, Woolwich and Blenheim have been placed on the disposal list. H.M.S. Diligence has been withdrawn from the Atlantic Fleet and placed on the disposal list.

The second Cruiser Squadron has been reduced by one cruiser, and is now a four-ship squadron. The First Submarine Flotilla in the Atlantic Fleet has been reconstituted with one "K" class submarine, and four "L" class boats, the remaining "K" class vessels and one "L" class being scrapped. One of the Destroyer Flotillas attached to the Atlantic Fleet (the Seventh) has been reduced to reserve, whilst numerous reductions have been made in the numbers of tenders attached to Harbour Training Establishments.

Three reserve cruisers (H.M.S. Southampton, Dublin and Chatham), one flotilla leader and eighteen of the older type of destroyers have been placed on the disposal list and provision is made for a further fifteen destroyers to be scrapped in 1926.

The very regrettable loss with all hands of the Submarine M.1 in circumstances with which every one is familiar has caused an unforseen reduction in the submarine strength of the Navy.

On the West Coast of Africa the old gunboats Dwarf and Thistle have been replaced by modern sloops of much greater naval efficiency and with better accommodation for the crews.

Co-operation with the Dominions, and India.

H.M.S. Diomede has now been attached to the New Zealand Division of the Royal Navy, so that two cruisers are being maintained by the New Zealand Government, which is showing a very lively interest in matters of Naval Defence. A trawler is being fitted out for the New Zealand Government for service in minesweeping training and is expected to leave England about the end of February.

During the summer of 1925, H.M.S. Concord was lent from the Royal Navy to the Royal Australian Navy, H.M.A.S. Brisbane, of the Royal Australian Navy, being attached to the China Squadron for several months. A similar exchange of cruisers has recently been put into operation for the first six months of 1926, H.M.S. Delhi being detached from the Mediterranean Fleet for service in Australian waters and H.M.A.S. Melbourne, of the Royal Australian Navy, being attached temporarily to the Mediterranean Fleet. H.M.A.S. Melbourne will visit England from the end of March to the beginning of May, and arrangements will be made for leave to be given to the officers and men of her crew.

It is interesting to record that this year will mark, for the first time, the appointment of a Captain of the Royal Australian Navy to be Commodore Commanding, H.M. Australian Fleet.

The announcement by the Government of India of the reconstitution of the Royal Indian Marine on a combatant basis as the Royal Indian Navy is welcomed by the Admiralty, who are in general agreement with the scheme of reorganisation.

Rhine Flotilla.

When the British troops occupied the Cologne Bridge Head in accordance with the terms of the Armistice and subsequent Treaty of Versailles, a flotilla of motor launches was instituted on the Rhine for patrol work. Reductions have been made in this Flotilla from time to time and now that the Cologne area has been evacuated,

the motor launches have been withdrawn, and are proceeding home via the French Canals, Paris and Le Havre.

Fishery Patrol Craft.

The Fishery Patrol Service has kept in touch by exchanges of visits with the Fishery Protection Services of other nations, and satisfactory relations have been maintained. During 1925, a further substitution of a patrol boat for two trawlers was effected, in the interests of more efficient protection of the interests of British Fishing Craft.

Washington Treaty.

In accordance with the provisions of the Washington Treaty, three of the four battleships, Ajax, King George V, Centurion and Thunderer, will be taken in hand for scrapping at the end of 1926. The fourth will replace the Agamemnon as target ship and the latter vessel will be scrapped.

China.

The political situation in China has caused heavy demands to be made on ships of the China Squadron for protection of British interests, and has also necessitated the landing of parties from H.M. Ships to co-operate with parties from warships of other nationalities for the protection of lives and property and for the protection of essential public services in the foreign settlements.

There have been several cases of piracy in Chinese Waters. Four launches were specially commissioned for dealing with the outbreak in the Canton Delta. H.M. Ships on several occasions co-operated with the local Chinese authorities in expeditions against the pirates' headquarters.

In July, the situation in Canton rendered it necessary to despatch H.M.S. Hermes to China from the Mediterranean as an additional protection for British lives and property. H.M.S. Vindictive has now arrived on the station to relieve H.M.S. Concord, and the Hermes is being withdrawn to rejoin Mediterranean Fleet. H.M.S. Cairo from the East Indies Squadron was also attached temporarily to the China Squadron from July to October to assist in dealing with the situation.

Slave Traffic.

The Sloops in the Red Sea have continued their operations for the prevention of slave traffic. The situation in the Hedjaz for the last few months has, however, curtailed this work owing to the presence of H.M. Ships being required at Jeddah for the protection of British interests.

Tangier Patrol.

Two destroyers have co-operated with the French and Spanish Navies in the patrol of the coast of the Tangier international zone for the prevention of traffic in arms.

Greek Navy.

A Naval Mission, under the direction of a Rear-Admiral, has proceeded to Athens to assist the Greek Government in the reorganisation of their navy.

Chilean Navy.

A Naval Advisory Staff, consisting of five Naval and one Air Officer, has recently proceeded to Chile.

Cruise of H.M.S. Repulse.

On March 28, His Royal Highness the Prince of Wales embarked on board H.M.S. Repulse for a further cruise, which included visits to the Colonies and Dependencies of the West Coast of Africa and the Dominion of South Africa.

At the invitation of their respective Governments, the cruise was extended to South America in order that His Royal Highness might visit the Republics of Uruguay, Argentina and Chili, short stays being made at St. Helena on passage to the River Plate, and St. Vincent, Cape Verde Islands en route from the River Plate to England.

Personnel.

The personnel of the Fleet proposed in Vote "A" for 1926 amounts to 102,675, being the same as for last year.

It was mentioned in last year's Statement that this number would not provide for all the New Construction and would, in fact, only provide about 1/10 for the five Kents.

Owing, however, to the large economies which have been made during the current year, the numbers now provided in Vote "A" will provide crews for all New Construction up to and including the 1925 programme.

It is proposed to recommence the entry of a few Short Service seamen this year.

The Committee to investigate the future requirements of Executive Officers, with special reference to numbers and to the flow of promotion, which was referred to in my previous statement, has been appointed under the presidency of the Right Hon. Viscount Chelmsford, G.C.S.I., G.C.M.G., G.C.I.E., G.B.E., and is now sitting.

In view of the increasing difficulty of obtaining recruits for the Medical branch of the Fighting Services, an Interdepartmental Committee, under the presidency of Sir Warren Fisher, G.C.B., has been set up, and is now sitting, to consider the rates of pay of the three Medical Services, and matters ancillary thereto.

As a small measure of economy, steps have been taken to discontinue the Special Reserve of Engineer Officers on its present basis. The Reserve, however, is being retained on a non-training basis.

Promotion from the lower deck has now been resumed in all branches. Six promotions to boatswain were made on January 1, 1926.

As a result of the fall in the cost of living and of the investigations of the Anderson Committee, H.M. Government decided to bring into force reduced rates of pay for officers and men entering the Royal Navy and Royal Marines after October 4, 1925. The new rates are also being applied to the Reserves.

It has been found by experience that the system of ability assessments, which is based partly upon the degree of efficiency with which a man performs his duties and partly on fitness for advancement is not entirely satisfactory. A simple scheme of "efficiency" in assessments, based solely upon efficiency in substantive rating, will come into force on May 31 next.

In consequence of the difficulty in finding accommodation afloat for Seaman Class Boys and young Ordinary Seamen, arrangements have been made for about 500 of these to be accommodated at Port Edgar, where they are trained for Able Seaman in the barracks and in the vessels of the Destroyer Flotilla stationed at that port.

The admission of naval lunatics to Yarmouth Hospital has been discontinued. As soon as the number of patients at Yarmouth is sufficiently low, arrangements will be made for their transfer to civilian Mental Hospitals, and Yarmouth will no longer be used for this purpose.

Enrolment in Class A of the R.F.R. on completing time for pension will be optional instead of compulsory in future.

Scale of bounty payable to men of the R.N.V.R. has been reduced for those enrolling or re-enrolling after January 18, 1926—maximum being £3 in lieu of £5.

To assist vocational training arrangements have been made for the provision of correspondence courses at reduced prices for the purpose of fitting men, especially in seagoing ships, for the practical instruction already given in Shore Establishments. In the case of men in their second period, and pensioners and invalids within one year of discharge, 25 per cent. of the fees are defrayable from Naval Funds.

Steps are being taken to re-assemble the Welfare Conference which met last in 1924.

Naval Air Work.

The number of Naval and Marine Officers trained and employed as pilots now amounts to 70, and 42 are still under training.

The first of the Naval Officers attached to the Royal Air Force under the scheme approved by H.M. Government in 1923 have now completed their full training as pilots, and have been appointed for duty afloat. The appreciation of the Board of Admiralty has been expressed at the very satisfactory results obtained during their training. Arrangements have been made for all executive officers to undergo a short course in elementary Naval Aeronautics in an aircraft carrier, either during the last year of their service as midshipman or at the first opportunity subsequently as junior commissioned officer. Such arrangements will, it is hoped, increase the interest taken by junior officers in the work of the Fleet Air Arm, and will be of considerable value to them later, even should they not decide to specialize in air duties.

All the R.A.F. aircraft hands for general duties in the Fleet Air Arm have been replaced by R.N. ratings. These substitutions have resulted in economies in that they have enabled the total complements of aircraft carriers to be substantially

reduced since the naval ratings are available for and capable of undertaking ships duties which the replaced airmen were not trained to perform.

An appreciable economy has been effected by accepting, for the time being, a lower percentage of aircraft reserves.

Special courses in Aerial Navigation, Meteorology and Photography for selected R.N. Observers have been instituted and a programme of practices in aerial fighting under sea conditions has been introduced for all Fleet Air Arm pilots and observers.

Steady progress in the use of aircraft by the Fleet is indicated by reports received from sea.

General Fleet Training.

In spite of the reductions which it has been necessary to make in the numerical strength of the principal Fleets, mainly among the smaller vessels and also in spite of increased economy in the use of fuel, every effort has been made to continue the tactical training of the Fleet in as realistic a manner as numbers allow, and to keep pace with modifications and improvements in weapons and design.

Gunnery and Torpedo Practices have been mainly directed towards the investigation of definite problems arising from the study by the Naval Staff of tactical situations which are presented by the different types and phases of naval actions. This has led to valuable practices of an advanced nature, resulting in greater efficiency in fire discipline.

The subject of anti-aircraft gunnery continues to receive great attention. There is naturally a check in the acceleration of progress while the material recognized as essential is being supplied, but the benefit of the investigations in this direction will be more fully reaped next year.

Satisfactory progress has been maintained in the development of measures against submarines.

In accordance with the practice of recent years and in order to give experience in the handling of large squadrons, arrangements have again been made for the Atlantic and Mediterranean Fleets to carry out a series of tactical exercises in the Mediterranean this Spring.

The need for economy will prohibit any mobilization and exercise of the Reserve Fleet during 1926.

Research.

The progress of Scientific Research, for which provision is made in Vote 6, has been steady.

Experience gained in the operation of the Admiralty's pool of research staffs has led to an extension of this principle in the formation of further pools of technical and analytical officers. It has been found that this principle permits the most effective utilization of the small staff which is available for any individual problem. Advantage is being taken of any opportunities which arise to effect a gradual re-organization which has as its object the centralization of investigations of a kindred nature, in the most convenient establishment. In particular, it is hoped that it will be found possible during the financial year to carry this policy into effect in regard to certain anti-submarine work which is now in progress in various establishments.

Ship Construction and Dockyard Work.

The programme for 1926 includes provision for commencing the construction of the following new ships :—

2 "A" Class Cruisers.
1 "B" Class Cruiser.
6 "O" Class Submarines.
1 Submarine Depôt Ship.
1 Repair Ship.
4 Motor Launches.

Of these ships one "A" Class Cruiser and one Submarine will be built in H.M. Dockyards, the construction of the remaining vessels being put out to contract.

The following new ships have been completed in the Royal Dockyards during 1925, and have been or are expected to be passed into commission before the end of the current financial year :—

Cruisers	Effingham, Emerald and Enterprise.
Flotilla Leader	Keppel.
Submarines	X.1 and L.27.

The additional sections for the ex-German Floating Dock which were completed at Chatham during the early part of this financial year, together with the original dock, were successfully towed to Malta and are now in position at that yard.

The battleships Nelson and Rodney have been launched, and the five cruisers of the Kent class of 1924 programme have been advanced to the launching stage.

Two new cruisers, class "A" have been ordered at Portsmouth and Devonport, and two sister ships are being ordered by contract as provided in the programme of 1925.

The work of constructing the mine-layer Adventure at Devonport, and submarines O.1 at Chatham and L.26 at Devonport, has been advanced, and these ships will be completed during the financial year 1926.

The destroyers Amazon and Ambuscade have been launched and it is anticipated that they will be completed during the financial year 1926.

Orders have been placed for the four gunboats of the current year's programme.

Tenders have been invited for a large floating dock for Singapore.

The reconstruction of Furious as an aircraft carrier was completed early in the current year and the ship is now on service with the Atlantic Fleet.

The cruiser Vindictive after successful trials launching aircraft from her catapult has proceeded to the China Station.

The work on Warspite is nearly completed and the Renown will be completed in 1926. Further progress will be made on Courageous and Glorious, in reconstruction as aircraft carriers. Provision is also made for advancing work of bulging the Valiant. One of the King George V. class will be taken in hand for conversion into a target ship.

The scope of the projected programme of retubing work on cruisers and destroyers has been substantially diminished by the decision to scrap the least efficient of the vessels of these types.

The estimates for machinery for H.M. Dockyards and Shore Establishments provide for the modernization of electric generating stations being proceeded with, also the equipment of a Steel Foundry at Portsmouth, and supply of machinery of latest type for general purposes, either to replace worn out machinery or to supersede obsolete methods.

W. C. Bridgeman.

PROGRAMME OF NEW CONSTRUCTION.

The existing programme of construction in Navy Votes, 1925–26 provides for progress on

2 battleships (Nelson and Rodney).
5 cruisers (Kent class).
3 cruisers (Effingham, Emerald and Enterprise to be completed).
1 minelayer.
2 destroyers.
3 submarines (1 "O" class. Two "L" class to be completed).

The total provision in Navy Estimates for the above programme is £6,709,567, but if construction proceeds uninterruptedly and accounts can be liquidated punctually the total expenditure may prove to be about £7,647,000 or about £939,000 more, and the amount remaining to be met in subsequent years is £10,158,000 or £9,219,000 if the £939,000 is paid in 1925–26.

New Proposals.

It is proposed to adopt the following programme of new construction in the years 1925—26 to 1929–30:—

—	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.
Cruisers:					
Class "A"	4	2	1	1	1
Class "B"	—	1	2	2	2
Aircraft carriers	—	—	—	—	1
Destroyers	—	—	9	9	9
Submarines "O" type	—	6	6	6	5
,, Fleet type	—	—	—	—	1
Gunboats	4	—	—	1	—
Motor launches	—	4	—	—	—
Submarine depôt ships	—	1	—	1	—
Net layer	—	—	—	—	1
Repair ship	—	1	—	—	—
Floating dock	1	—	—	—	—

Together with the necessary steam and motor boats.

The total cost of the above programme is estimated at £58,000,000.

The cost which it is expected will fall on Navy Votes for 1925-26 to 1929-30 in respect of this programme is £37,670,000.

The total expenditure falling to be met year by year in the above period if construction proceeds uninterruptedly is :

—	1925-26.	1926-27.	1927-28.	1928-29.	1929-30.
	£	£	£	£	£
Old programme .	7,647,000	6,954,000	2,197,000	68,000	—
New programme .	527,170	3,724,000	8,526,000	11,997,000	12,896,000
	8,174,170	10,678,000	10,723,000	12,065,000	12,896,000

In the light of all past experience, however, it is reasonable to anticipate that payments will not fall due at the above rate and a deduction of 10 per cent. or more over part of the programme will almost certainly be made in order to arrive at the estimates laid before Parliament in any given year.

W. C. BRIDGEMAN.

ADMIRALTY,
July 27, 1925.

ABSTRACT OF THE NAVY ESTIMATES, 1926–27.

Votes.		Estimates 1926. Gross Estimate.	Estimates 1926. Net Estimate.	Estimates 1925.* Net Estimate.
	I.—Numbers.		Maximum Numbers.	Maximum Numbers.
A	Number of Officers, Seamen, Boys, and Royal Marines	102,675	102,675	102,675
	Number of Royal Marine Police . .	450	450	350
	II.—Effective Services.	£	£	£
1	Wages, etc., of Officers and Men of the Royal Navy, and Royal Marines, and Civilians employed on Fleet Services	14,801,451	14,718,000	14,890,300
2	Victualling and Clothing for the Navy .	5,397,540	4,423,200	4,332,830
3	Medical Establishments and Services .	499,910	452,900	457,600
4	Fleet Air Arm	681,000	681,000	1,320,000
5	Educational Services	412,260	326,800	336,000
6	Scientific Services	509,328	435,300	438,400
7	Royal Naval Reserves	446,080	445,500	486,000
8	Shipbuilding, Repairs, Maintenance, etc.:			
	Section I.—*Personnel* . .	7,637,226	7,487,200	7,887,470
	Section II.—*Matériel* . .	7,255,400	5,480,200	7,029,800
	Section III.—Contract Work .	7,555,700	7,427,200	6,194,300
9	Naval Armaments	3,854,210	3,436,400	4,371,900
10	Works, Buildings, and Repairs at Home and Abroad	2,675,300	2,375,300	2,588,000
11	Miscellaneous Effective Services . .	1,037,156	971,400	790,600
12	Admiralty Office	1,249,302	1,220,000	1,246,100
	Total Effective Services . £	54,011,863	49,880,400	52,369,300
	III.—Non-Effective Services.			
13	Naval and Marine, Officers . . .	2,886,688	2,859,600	2,889,800
14	Naval and Marine, Men . . .	4,547,150	4,510,400	4,401,900
15	Civil Superannuation, Compensation Allowances, and Gratuities . .	868,027	849,600	839,100
	Total Non-Effective Services . £	8,301,865	8,219,600	8,130,800
	Grand Total . . £	62,313,728	58,100,000	60,500,100

Net Decrease . . . . . £2,400,100.

Admiralty,
Feb. 22, 1926.

W. C. Bridgeman. Hubert Brand. J. D. Kelly. Fred. C. Dreyer.
Beatty. A. E. M. Chatfield. F. L. Field. Stanhope.

J. C. C. Davidson } Secretaries.
O. Murray }

* Including Supplementary Estimate, July 27, 1925 (Parliamentary Paper. No. 150).

STATEMENT SHOWING THE NUMBERS BORNE, THE EXPENDITURE ON NAVAL SERVICES FOR THE YEARS 1915 TO 1924, AND THE ESTIMATES FOR 1925 AND 1926.

Year.	Vote A. — Average numbers borne.	Vote 1. — Wages, &c., of Officers, &c.	Vote 2. — Victualling and Clothing.	Vote 3. — Medical Establishments, &c.	Vote 4. — Civilians employed on Fleet Services.	Vote 5. — Educational Services.	Vote 6. — Scientific Services.	Vote 7. — Royal Naval Reserves.	Vote 8. — Shipbuilding, Repairs, Maintenance, &c. Section I. Personnel.	Vote 8. Section II. Matériel.	Vote 8. Section III. Contract Work.	Vote 9. — Naval Armaments.	Vote 10. — Works.	Vote 11. — Miscellaneous.	Vote 12. — Admiralty Office.	Vote 13. — Half Pay, &c.	Vote 14. — Naval, &c., Pensions.	Vote 15. — Civil Superannuation, &c.	Balances Irrecoverable.	Total Expenditure.
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
1915	297,008	24,321,519	10,796,024	578,703	444,907	171,610	108,535	755,201	7,868,812	44,778,970	64,513,255	25,649,203	5,710,782	16,321,128	851,066	717,519	1,730,117	400,161	17,085	205,733,597
1916	349,578	29,399,358	11,173,592	713,525	517,209	201,497	110,478	863,943	8,943,491	40,952,653	53,982,842	36,742,534	6,694,878	15,460,001	1,024,108	713,621	1,944,003	388,509	50,976	209,877,218
1917	406,977	37,559,536	13,481,159	792,569	561,308	210,243	152,160	874,930	12,660,160	36,494,694	70,609,055	34,177,359	6,556,769	9,193,802	1,454,835	709,227	1,446,247	413,746	41,092	227,388,891
1918	381,311	46,373,511	24,219,351	1,158,287	491,270	247,922	262,886	871,970	15,037,763	59,128,675	94,248,874	64,866,784	10,928,241	9,357,532	1,985,894	704,914	3,733,778	445,485	28,090	334,091,227
1919	176,087	32,385,806	8,823,106	733,046	556,778	401,864	364,832	458,044	12,426,177	*Credit* :— 785,986	48,348,933	14,441,835	5,595,608	11,118,631	2,042,715	1,176,937	15,133,064	802,279	60,875	154,084,044
1920	124,009	21,314,360	8,311,708	683,830	759,110	503,152	249,185	359,694	12,096,747	6,799,965	12,001,445	8,493,951	4,992,969	5,724,974	2,073,764	2,352,344	4,847,475	880,996	23,611	92,505,290
1921	127,180	19,220,859	6,831,481	643,735	480,243	405,592	359,575	423,056	10,690,188	8,835,771	4,834,336	6,253,468	4,746,485	3,506,514	1,780,641	2,002,201	3,881,368	1,020,693	69,935	75,986,141
																Non-effective Services. Officers.	Men.			
1922	107,782	15,762,232	4,767,118	492,419	258,600	382,065	354,961	423,722	7,075,533	3,877,716	3,225,598	3,678,783	3,553,831	2,096,219	1,371,961	3,701,984	5,471,088	968,880	29,679	57,492,389
1923	99,107	14,175,111	4,153,803	410,842	193,793	330,644	379,489	459,391	6,751,496	5,521,336	4,427,874	3,840,606	3,215,766	982,173	1,247,813	2,856,764	4,260,245	823,340	33,864	54,064,350
1924	99,453	14,150,863	4,152,902	442,756	190,669	334,648	393,054	446,902	7,489,659	5,592,183	5,415,210	3,507,190	3,140,887	1,065,869	1,349,519	2,868,798	4,328,526	811,797	12,355	55,693,787
1925 (Estimate)*	103,025(*a*)	14,890,000	4,332,830	457,600	Fleet Air Arm (*b*) 1,320,000	336,000	438,400	486,000	7,887,470	7,029,800	6,194,300	4,371,900	2,588,000	790,600	1,246,100	2,889,800	4,401,900	839,100	—	60,500,000
1926 (Estimate)	103,125(*a*)	14,718,000	4,423,200	452,900	681,000	326,800	435,300	445,500	7,487,200	5,480,200	7,427,200	3,436,400	2,375,300	971,400	1,220,000	2,859,600	4,510,400	849,600	—	58,100,000

Note.—The figures under Vote 9 include the cost of Naval Aviation Services from the year 1916 to the year 1919 inclusive.

* Including Supplementary Estimate, 27 July, 1925 (Parliamentary Paper, No. 150).

(*a*) Maximum for the year, including Royal Marine Police. (*b*) Replacing "Civilians employed on Fleet Services," transferred to Vote I. in 1925.

EXPENDITURE FOR NAVAL PURPOSES OF THE PRINCIPAL FOREIGN POWERS.

UNITED STATES NAVY.

Appropriation Bill, 1927 (July 1, 1926, to June 30, 1927).

		Appropriations. 1927. Dollars.	Appropriations. 1926. Dollars.
Naval Secretary's Department, including various out-stations		3,372,800	3,598,750
Bureau of Navigation, including Transport and Naval Reserve		10,895,000	10,643,850
Hydrographic Office		427,420	425,000
Naval Observatory		150,950	150,960
Bureau of Engineering		19,951,000	19,961,000
Bureau of Construction and Repairs		17,430,000	17,315,000
Bureau of Ordnance		12,229,500	11,982,000
Bureau of Supplies and Accounts:			
Pay of the Navy	$120,000,000		
Provisions, Maintenance, fuel, etc.	44,360,000		
		164,360,000	162,890,000
Bureau of Medicine and Surgery		2,143,400	2,268,400
Bureau of Yards and Docks		9,697,300	9,858,500
Bureau of Aeronautics:			
Aviation Navy	18,900,000		
Salaries	191,000		
		19,091,000	14,981,000
Naval Academy		1,929,160	1,933,968
Marine Corps		23,272,500	23,949,650
Increase of the Navy		28,275,000	28,444,000
Major alterations to Naval Vessels		7,500,000	9,000,000
Annual Estimates		320,725,030	317,402,078
Permanent and Indefinite, including Naval Hospital Fund		2,144,400	2,460,050
Total		322,869,430*	319,862,128

* The par rate of exchange is $4·866 to the £.

IMPERIAL JAPANESE NAVY.

Estimates, 1926–27.

The Estimates of the Imperial Japanese Navy are divided under two headings, "Ordinary" and "Extraordinary."

The figures for 1926–27 as compared with the previous year are as follows:—

	1926–27. Yen.	1925–26. Yen.
Ordinary	126,672,005	122,349,150
Extraordinary	112,356,000	105,016,934
Total	239,028,005†	227,366,084

The "Ordinary" expenditure is for pay, provisions, etc., and the general upkeep of the Fleet and its Air Service, and the "Extraordinary" expenditure for new construction and additions and improvements to the present Fleet and its Air Service and establishments.

† The par rate of exchange is 9·75 yen to the £.

FRENCH NAVY.

ESTIMATES, 1926–27.

The Estimates of the French Navy are shown divided under three headings, "Ordinary," "Extraordinary," and "Temporary expenses for reparations due to war."

The figures for 1926-27, including the votes for new construction, as compared with the previous year, are as follows:—

	1926-27. Francs.	1925-26. Francs.
Ordinary	1,735,006,681	1,332,709,991
Extraordinary	26,325,400	12,589,449
Temporary expenses for reparations due to war	87,305	83,191
Total	1,761,419,386	1,345,382,631*

* The par rate of exchange is 25·225 frs. to the £.

ROYAL ITALIAN NAVY.

ESTIMATES, 1926–27.

(July 1, 1926—June 30, 1927.)

	1926-27. Lire.	1925-26. Lire.
ORDINARY EXPENDITURE.		
General Expenses	4,666,000	4,551,000
Pensions	74,070,000	56,270,000
Education	4,181,600	3,855,600
Lighthouses and Pilotage	6,013,400	5,763,400
Maintenance, Construction, Armaments, Establishments, and Coast Works	854,400,000	864,209,400
Total	943,331,000	934,649,400
EXTRAORDINARY EXPENDITURE.		
General and Various	97,009,130	45,350,600
Total	1,040,340,130	980,000,000

* The par rate of exchange is 25·225 lire to the £.

BRITISH AND FOREIGN NAVAL ATTACHÉS.

British Naval Attachés Accredited to Foreign Countries.

To:—

Albania, Bulgaria, Greece, Italy, Jugoslavia, Roumania, Serbia, and Turkey: Naval Attaché, Captain C. D. Burke (appointed 15th February, 1926); Headquarters, Rome, Italy.

Belgium, France, Netherlands, Portugal and Spain: Naval Attaché, Captain J. M. Pipon, C.M.G., M.V.O., O.B.E. (appointed 15th July, 1925); Headquarters, Paris, France.

Denmark, Esthonia, Finland, Germany, Latvia, Norway, Poland and Sweden: Naval Attaché, Commander G. S. F. Nash (appointed 15th February, 1926); Headquarters, Berlin, Germany.

Japan and China: Naval Attaché, Captain C. V. Robinson: Headquarters, Tokyo, Japan.

North and Central America, including Costa Rica, Cuba, Haiti, Honduras, Mexico, Nicaragua, Panama, Salvador, San Domingo, and the United States: Naval Attaché, Captain The Hon. Arthur Stopford, C.M.G. (appointed 24th October, 1925); Assistant Naval Attaché, Engineer-Commander A. Knothe (appointed 6th June, 1925): Headquarters, Washington, D.C., U.S.A.

South America, including the Argentine Republic, Brazil, Chile, Columbia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela: Naval Attaché, Captain J. S. C. Salmond (appointed 6th Feb., 1925).

Foreign Naval Attachés Accredited to Great Britain.

From:—

Argentine Republic: Naval Attaché, Commander Luis Pillado Ford: 30, Grosvenor Gardens, S.W.1.

Brazil: Naval Attaché, Commander Roberto Guedes, 23, Warwick Mansions, Cromwell Crescent, S.W.5.

Chile: Naval and Air Attaché, Commander Daniel Lafrientz Valenzuela: Address, Chilean Legation, 3, Green Street, W.1.

Denmark: Naval Attaché, Commander C. V. Evers: Address, 29, Pont Street, London, S.W.1.

France: Naval Attaché, Capitaine de Vaisseau Thouroude, D.S.C.; Assistant N. A., Ingénieur Principal du Génie maritime Pietresson de St. Aubin: Address, Albert Gate House, Hyde Park, London, S.W.1.

Greece: Naval and Air Attaché, Commander Gerassimos Vassiliades: Address, Flat B, Upper Feilde, Park St., London, W.1.

Italy: Naval Attaché, Captain Count G. A. Raineri-Biscia, C.V.O.: Address, 4, Tilney Street, Park Lane, London, W.1.

Japan: Naval Attaché, Captain Teijiro Toyoda, D.S.O.; Assistant Naval Attaché, Commander T. Honda, D.S.C.: Address, Broadway Court, Broadway, West minster, London, S.W.1.

Norway: Naval Attaché, Commander K. Prestrud: Address, Norway House, 21–24, Cockspur Street, Westminster, London, S.W.1.

Portugal: Naval Attaché, post vacant: Address, 12, Taviton Street, Gordon Square, London, W.C.1.

Peru: Naval Attaché, Capitan de Fragata Don Manuel D. Faura: Address, Peruvian Legation, 28, Holland Park, London, W.11.

Poland: Naval Attaché, Major le Comte Roman Michalowski: Address, Polish Legation, 47, Portland Place, London, W.1.

Soviet Union: Naval Attaché, Monsieur Eugene Berens: Address, Chesham House, Chesham Place, S.W.1.

Spain: Naval Attaché, Capitan de Corbeta Don Fernando Navarro y Cap de Villa: Address, Spanish Embassy, 1, Grosvenor Gardens, Westminster, London, S.W.1.

Sweden: Naval Attaché, Commander Baron Lave Malcolm Beck-Friis: Address, 27, Portland Place, London, W.1.

United States of America: Naval Attaché, Captain W. C. Watts, Assistant Naval Attachés, Commander J. R. Beardall, Commander J. O. Gawne (C.O.), Commander R. A. Burg (Aviation), Commander A. K. Atkins (Engineering): Address, 6, Grosvenor Gardens, Westminster, London, S.W.1.

MERCHANT SHIPPING
REFERENCE SECTION.

MERCHANT SHIPPING REFERENCE SECTION.

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NUMBER AND GROSS TONNAGE OF THE VESSELS OF 100 TONS GROSS AND UPWARDS (STEAM, SAIL, AND MOTOR) BELONGING TO EACH OF THE SEVERAL COUNTRIES OF THE WORLD, AS RECORDED IN LLOYD'S REGISTER.

Flag.	June, 1913.†		June, 1919.		June, 1922.	
	No.	Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.
Gt. Britain and Ireland	9,214	18,696,237	7,964	16,555,471	8,849	19,295,637
British Dominions	2,073	1,735,306	2,141	2,052,404	2,472	2,746,883
Total	11,287	20,431,543	10,105	18,607,875	11,321	22,042,520
United States of America: Sea	2,696	2,998,457	4,350	10,782,170	4,886	14,738,506
Lakes	627	2,382,690	506	2,257,786	495	2,247,690
Philippine Islands	77	46,489	73	51,817	99	76,264
Total	3,400	5,427,636	4,929	13,091,773	5,480	17,062,460
Argentine	308	214,835	215	154,441	216	181,555
Austria-Hungary	427	1,011,414	339	714,617	—	—
Belgium	172	304,386	152	313,276	275	579,477
Brazil	459	329,637	428	512,675	399	492,571
Chili	131	139,792	114	101,647	126	131,401
China	66	86,690	102	132,515	134	188,388
Cuba	59	61,536	51	47,295	65	62,677
Denmark	811	762,054	645	702,436	822	1,038,138
Esthonia	—	—	—	—	98	45,259
Finland	—	—	338	180,962	352	213,671
France	1,552	2,201,164	1,440	2,233,631	2,094	3,845,792
Germany	2,321	5,082,061	1,768	3,503,380	1,723	1,887,408
Greece	442	722,782	312	323,796	379	668,127
Holland	759	1,309,849	931	1,591,911	1,164	2,632,713
Italy	1,114	1,521,942	858	1,370,097	1,413	2,866,335
Japan *	1,037	1,500,014	1,418	2,325,266	2,026	3,586,918
Latvia	—	—	—	—	67	40,124
Norway	2,191	2,457,890	1,629	1,857,829	1,852	2,600,861
Peru	60	45,514	63	79,342	74	101,209
Portugal	208	120,579	227	261,212	286	285,878
Roumania	33	45,408	35	63,792	31	72,297
Russia	1,216	974,178	618	541,005	—	—
Spain	607	840,995	576	750,611	973	1,282,757
Sweden	1,436	1,047,270	1,263	992,611	1,345	1,115,375
Turkey	272	157,298	161	116,249	—	—
Uruguay	65	75,531	43	44,499	53	76,311
Other Countries and flag not recorded	158	98,115	495	304,530	1,167	1,270,564
Total	30,591	46,970,113	29,255	50,919,273	33,935	64,370,786

* Japanese sailing vessels are not recorded in Lloyd's Register Book.

† In 1913 the figure shown is the total of the gross tonnage of steam and motor vessels, and the *net* tonnage of sailing vessels; in 1919 and subsequent years the figure is given in gross tons throughout.

NUMBER AND GROSS TONNAGE OF THE VESSELS OF 100 TONS GROSS AND UPWARDS (STEAM, SAIL, AND MOTOR) BELONGING TO EACH OF THE SEVERAL COUNTRIES OF THE WORLD, AS RECORDED IN LLOYD'S REGISTER—*continued.*

Flag.	June, 1924.		June, 1925.		June, 1926.	
	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.
Gt. Britain and Ireland	8,559	19,105,838	8,559	19,440,711	8,369	19,399,797
British Dominions .	2,449	2,772,662	2,430	2,781,487	2,477	2,870,327
Total	11,008	21,878,500	10,989	22,222,198	10,864	22,270,124
United States of America — Sea . .	4,508	13,530,544	4 265	12,948,632	4,001	12,364,668
United States of America — Lakes . .	524	2,361,464	525	2,364,920	529	2,433,049
United States of America — Philippine Islands .	96	64,959	92	63,928	97	81,044
United States of America — Total .	5,128	15,956,967	4,882	15,377,480	4,627	14,878,761
Argentine	215	199,185	226	222,759	242	234,848
Austria-Hungary . .	—	—	—	—	—	—
Belgium	251	560,597	240	542,583	225	507,473
Brazil	375	464,734	374	465,643	361	482,308
Chili	147	181,092	144	185,758	138	179,712
China	168	248,108	178	269,937	201	299,806
Cuba	70	59,523	70	61,502	72	61,735
Denmark	764	1,035,943	772	1,059,846	771	1,081,146
Esthonia	108	45,897	111	46,277	115	49,025
Finland	322	207,952	324	210,829	363	232,792
France	1,857	3,498,233	1,828	3,511,984	1,769	3,490,606
Germany	2,003	2,953,671	2,028	3,073,713	1,986	3,110,918
Greece	409	761,210	459	897,873	467	924,944
Holland	1,082	2,556,417	1,099	2,600,831	1,109	2,564,904
Italy	1,299	2,832,212	1,353	3,028,661	1,401	3,240,630
Japan *	2,055	3,842,707	2,087	3,919,807	2,087	3,967,617
Jugo-Slavia	†	†	†	†	137	195,787
Latvia	69	46,281	72	52,712	87	67,783
Norway	1,753	2,505,393	1,805	2,680,642	1,844	2,841,905
Peru	38	70,821	39	75.723	46	79,068
Portugal	279	301,308	284	299,921	285	280,116
Roumania	39	71,183	37	67,851	37	68,173
Russia (Soviet Union)	397	338,792	377	322,257	370	323,284
Spain	950	1,239,521	930	1,184,721	924	1,163,008
Sweden	1,405	1,254,550	1,389	1,301,126	1,380	1,338,089
Turkey	134	105,148	174	132,244	174	136,796
Uruguay	68	79,920	65	76,770	63	75,213
Other Countries and flag not recorded .	563	727,702	580	749,765	468	637,799
Total	32,956	64,023,567	32,916	64,641,418	32,615	64,784,370

* Japanese sailing vessels are not recorded in Lloyd's Register Book.
Figures included in total for "Other Countries."

BRITISH AND IRISH MERCHANT TONNAGE, AND UNITED STATES SEA-GOING MERCHANT TONNAGE, AS COMPARED WITH THE WORLD'S TOTAL MERCHANT FLEET.

Year.	World.	Great Britain and Ireland.	Percentage of British and Irish Tonnage to Total.	United States.†	Percentage of United States Tonnage to Total.
	Tonnage.	Tonnage.		Tonnage.	
1890	21,118,528	10,241,856	48·5	‡	
1891	22,912,753	10,585,747	46·2	‡	
1892	23,672,698	11,157,662	47·1	1,926,426	8·1
1893	24,236,865	11,563,997	47·7	1,964,359	8·1
1894	24,547,597	11,807,010	48·1	2,171,459	8·8
1895	25,086,199	12,117,957	48·3	2,164,753	8·6
1896	25,593,186	12,293,539	48·0	2,234,725	8·7
1897	25,889,044	12,403,409	47·9	2,326,838	9·0
1898	26,543,360	12,587,904	47·4	2,448,677	9·2
1899	27,613,851	12,926,924	46·8	1,872,245	6·8
1900	28,957,358	13,241,446	45·7	2,035,062	7·0
1901	30,479,971	13,656,161	44·8	2,231,925	7·3
1902	32,302,412	14,431,072	44·7	2,342,913	7·3
1903	33,501,855	14,889,571	44·4	2,480,981	7·4
1904	34,786,132	15,391,350	44·2	2,590,849	7·4
1905	35,998,180	15,803,180	43·9	2,649,411	7·4
1906	37,550,477	16,381,350	43·6	2,672,042	7·1
1907	39,435,788	16,999,668	43·1	2,728,711	6·9
1908	40,920,551	17,318,351	42·3	2,802,387	6·8
1909	41,447,825	17,377,936	41·9	2,791,282	6·7
1910	41,912,520	17,516,479	41·8	2,761,605	6·6
1911	43,144,909	17,872,697	41·4	2,808,684	6·5
1912	44,600,677	18,213,620	40·8	2,848,829	6·4
1913	46,970,113	18,696,237	39·8	2,998,457	6·4
1914	49,089,552	19,256,766	39·2	2,970,284	6·0
1915	49,261,769	19,541,368	39·7	3,522,933	7·1
1916	48,683,136	19,134,857	39·3	3,790,578	7·8
1917*	—	—	—	—	—
1918*	—	—	—	—	—
1919	50,919,273	16,555,471	32·5	10,782,170	21·2
1920	57,314,065	18,330,424	32·0	13,789,874	24·0
1921	61,974,653	19,571,554	31·6	14,697,088	23·7
1922	64,370,786	19,295,637	30·0	14,738,506	22·9
1923	65,166,238	19,281,549	29·6	14,597,035	22·4
1924	64,023,567	19,105,838	29·8	13,530,544	21·1
1925	64,641,418	19,440,711	30·1	12,948,632	20·0
1926	64,784,370	19,399,797	29·9	12,364,668	19·1

* Figures for 1917 and 1918 not available.
† Excluding American Great Lakes vessels.
‡ Not available.
NOTE.—Prior to 1919 the tonnages shown are the totals of gross tonnage for steam and motor vessels, and *net* tonnage for sailing vessels; in 1919 and subsequent years the figures are given in gross tonnage throughout.

NUMBERS OF STEAMERS AND MOTOR VESSELS OWNED BY THE PRINCIPAL MARITIME COUNTRIES ON JUNE 30, 1926, BY DIVISIONS OF AGE.

Country.	Numbers of Vessels owned of Various Ages.						Total Number of Vessels owned.	Percentage of Total Number of Ships under 5 years old.
	Under 5 years.	5 years and under 10 years.	10 years and under 15 years.	15 years and under 20 years.	20 years and under 25 years.	25 years and over.		
Gt. Brit. & Ireland	1,212	1,888	1,345	970	991	1,558	7,964	15·2
British Dominions	235	382	253	338	254	497	1,959	12·0
United States * .	129	1,897	258	212	201	419	3,116	4·1
Denmark . . .	117	181	79	52	83	149	661	17·7
France	161	436	193	215	170	323	1,498	10·7
Germany . . .	430	452	214	242	198	392	1,928	22·3
Holland . . .	158	312	212	130	114	135	1,061	14·9
Italy	117	238	105	124	129	386	1,099	10·6
Japan	220	888	207	152	209	411	2,087	10·5
Norway . . .	255	515	241	232	184	375	1,802	14·2
Spain	46	232	58	52	47	372	802	5·7
Sweden . . .	80	195	123	114	114	579	1,205	6·6
Other Countries .	141	485	338	437	491	1,513	3,405	4·1
Total for the whole World * . . .	3,301	8,101	3,621	3,270	3,185	7,109	28,587	11·5

* Excluding American Great Lakes vessels.

NUMBERS OF STEAMERS AND MOTOR VESSELS OWNED BY THE PRINCIPAL MARITIME COUNTRIES ON JUNE 30, 1926, BY DIVISIONS OF GROSS TONNAGE.

Country.	Numbers of Vessels Owned of Various Gross Tonnages.										Total Number of Vessels owned.	Percentage of Total Number of Ships of 6000 gross tons and over.
	100 tons and under 500 tons.	500 tons and under 1000 tons.	1000 tons and under 2000 tons.	2000 tons and under 4000 tons.	4000 tons and under 6000 tons.	6000 tons and under 8000 tons.	8000 tons and under 10,000 tons.	10,000 tons and under 15,000 tons.	15,000 tons and under 20,000 tons.	20,000 tons and over.		
Gt. Brit. & Ireland	3,496	720	791	872	1,185	520	177	132	46	25	7,964	11·3
British Dominions	948	286	285	269	108	39	11	10	3	—	1,959	3·2
United States * .	637	180	216	698	751	501	86	37	7	3	3,116	20·3
Denmark . . .	184	102	220	97	36	13	7	2	—	—	661	3·3
France	653	99	174	255	182	60	47	22	3	3	1,498	9·0
Germany . . .	910	340	240	189	120	78	32	13	1	5	1,928	6·7
Holland . . .	429	58	156	174	99	96	33	10	4	2	1,061	13·7
Italy	326	101	118	202	218	101	27	4	2	5	1,099	12·7
Japan	837	260	266	859	242	92	19	12	—	—	2,087	5·9
Norway . . .	678	225	470	214	155	48	9	8	—	—	1,802	33·3
Spain	383	87	99	177	45	5	2	4	—	—	802	1·4
Sweden . . .	610	155	281	92	54	8	—	2	3	—	1,205	1·1
Other Countries .	1,588	473	541	511	217	49	21	2	3	—	3,405	2·2
Total for the whole World * . . .	11,679	3,086	3,852	4,109	3,412	1,610	471	253	72	48	28,587	8·6

* Excluding American Great Lakes vessels.

Largest Merchant Vessels of the World.

(A list of all vessels of 10,000 tons gross or more arranged in order of gross tonnage.)

(T.= turbine engines ; M.= motor engines ; T. & R.= turbines & reciprocating engines ; T.E.= turbo-electric.)

Gross tonnage.	Name.	Speed † (knots.)	Date built.	Flag.	Owners.	L.* (ft.)	B*. (ft.)	D.* (ft.)
59,957	Leviathan (T.)	24	1914	U.S.	U.S.S.B.	907·6	100·3	58·2
56,551	Majestic (T.)	25	1921	Br.	Oceanic S.N. Co.	915·5	100·1	58·2
52,226	Berengaria (T.)	23	1912	Br.	Cunard S.S. Co.	883·6	98·3	57·1
46,439	Olympic (T. & R.)	22	1911	Br.	Oceanic S.N. Co.	852·5	92·5	59·5
45,647	Aquitania (T.)	23	1914	Br.	Cunard S.S. Co.	868·7	97·0	49·7
43,500	Ile de France (T.)	?	1926	Fr.	Cie. Gén. Transatlantique	757·8	91·8	61·2
34,569	Paris (T.)	22	1921	Fr.	Cie. Gén. Transatlantique	735·4	85·3	59·1
34,351	Homeric	20	1922	Br.	Oceanic S.N. Co.	751·0	83·3	48·6
33,000	Roma (T.)	?	1926	Ital.	Nav. Gen. Italiana	664·7	82·6	51·5
32,354	Columbus	20	1922	Ger.	Norddeutscher Lloyd	749·6	83·1	49·4
30,696	Mauretania (T.)	25	1907	Br.	Cunard S.S. Co.	762·2	88·0	57·1
28,150	Statendam (T.)	?	1926	Holl.	Holland-Amerika Lijn	670·4	81·4	49·4
27,132	Belgenland (T. & R.)	17½	1917	Br.	International Nav. Co.	670·4	78·4	44·7
25,160	Empress of Scotland	17½	1905	Br.	Canadian Pacific Co.	677·5	77·3	50·2
25,000	Saturnia (M.)	?	1926	Ital.	"Cosulich" Soc.	599·0	79·5	46·5
24,563	Adriatic	18	1906	Br.	Oceanic S.N. Co.	709·2	75·5	52·6
24,416	Conte Biancamano (T.)	21	1925	Ital.	Lloyd Sabaudo	650·9	76·1	27·5
24,281	Duilio (T.)	21	1923	Ital.	Nav. Gen. Italiana	602·4	76·3	46·3
24,149	Rotterdam	17	1908	Holl.	Nederl-Amerikaansche S.M.	650·5	77·4	43·5
23,884	Baltic	17	1904	Br.	Oceanic S.N. Co.	709·2	75·6	52·6
23,788	George Washington	18	1908	U.S.	U.S.S.B.	699·1	78·2	50·1
23,769	France (T.)	24	1912	Fr.	Cie. Gén. Transatlantique	690·1	75·6	48·5
22,150	Alcantara (M.)	?	1926	Br.	Royal Mail Co..	630·5	78·5	40·5
22,137	Asturias (M.)	17½	1925	Br.	R.M.S.P. Meat Transports	630·5	78·5	40·5
21,998	Minnetonka (T.)	16½	1924	Br.	Atlantic Transport Co.	600·8	80·4	49·4
21,861	Empress of Australia (T.)	17	1914	Br.	Canadian Pacific Co.	589·9	75·2	41·5
21,716	Minnewaska (T.)	16½	1923	Br.	Atlantic Transport Co.	600·8	80·4	49·4
21,657	Giulio Cesare (T.)	20	1921	Ital.	Nav. Gen. Italiana	602·4	76·5	46·3
21,517	Empress of Canada (T.)	20	1922	Br.	Canadian Pacific Co.	627·0	77·9	42·2
21,227	Cedric	17	1903	Br.	Oceanic S.N. Co.	680·9	75·3	44·1
21,179	Celtic	17	1901	Br.	Oceanic S.N. Co.	680·9	75·3	44·1
21,144	America	16	1905	U.S.	U.S.S.B.	668·8	74·3	47·8
21,000	Hamburg (T.)	?	1925	Ger.	Hamburg-Amerika Linie	602·5	78·7	51·6
20,847	Mooltan	17	1923	Br.	P. & O. S.N. Co.	600·8	73·4	48·6
20,837	Maloja	17	1923	Br.	P. & O. S.N. Co.	600·8	73·4	48·6
20,815	Albert Ballin (T.)	16	1923	Ger.	Hamburg-American Line	602·4	78·7	41·9
20,602	Deutschland (T.)	16	1923	Ger.	Hamburg-American Line	602·5	78·7	51·6
20,576	Cap Polonio (T. & R.)	18	1914	Ger.	Hamburg-Sud-Amerikanische Ges.	637·8	72·4	39·6
20,277	Carinthia (T.)	16½	1925	Br.	Cunard Co.	600·7	73·8	40·7
20,175	Franconia (T.)	16½	1923	Br.	Cunard Co.	601·3	73·7	40·6
20,050	Carnarvon Castle (M.)	18	1926	Br.	Union Castle Co.	630·7	73·5	41·5
20,032	Otranto (T.)	20	1925	Br.	Orient S.N. Co.	632·0	75·2	32·9
20,001	Oronsay (T.)	20	1925	Br.	Orient S.N. Co.	633·6	75·2	33·0
19,782	Caronia	18½	1905	Br.	Cunard Co.	650·0	72·2	40·2
19,777	Orama (T.)	20	1924	Br.	Orient S.N. Co.	632·0	75·2	32·9
19,761	Scythia (T.)	16½	1920	Br.	Cunard Co.	600·7	73·8	40·7
19,695	Laconia (T.)	16½	1922	Br.	Cunard Co.	601·3	73·7	40·6
19,653	Resolute (T. & R.)	16½	1920	Panama	Atlantic Mail Corp.	596·0	72·3	40·2
19,597	Samaria (T.)	16½	1921	Br.	Cunard Co.	601·5	73·7	40·7
19,582	Reliance (T. & R.)	16½	1920	Panama	Atlantic Mail Corp.	592·0	72·3	39·7
19,566	Carmania (T.)	18½	1905	Br.	Cunard Co.	650·4	72·2	40·0
19,361	Agamemnon	20	1902	U.S.	U.S.S.B.	684·3	72·3	40·2
19,023	Arundel Castle (T.)	18	1921	Br.	Union Castle Co.	630·5	72·5	41·5
18,967	Windsor Castle (T.)	18	1922	Br.	Union Castle Co.	632·4	72·5	41·6
18,940	Ohio	18	1923	Br.	Royal Mail Co.	590·8	72·0	37·6
18,765	Conte Verde (T.)	20	1923	Ital.	Lloyd Sabaudo	570·2	74·2	35·9
18,565	Lapland	17	1908	Br.	International Nav. Co.	605·8	70·4	37·4
18,495	Ceramic (T. & R.)	16	1913	Br.	Oceanic S.N. Co.	655·1	69·4	43·8
18,372	Mount Vernon	20	1906	U.S.	U.S.S.B.	685·4	72·2	40·5
18,357	Empress of France (T.)	19	1913	Br.	Allan Line	571·4	72·4	41·7
17,993	Gripsholm (M.)	17	1925	Swed.	Svenska Amerika Linien	553·0	74·4	37·7
17,910	Republic	14	1907	U.S.	U.S.S.B.	599·0	68·2	48·3
17,759	De Grasse (T.)	?	1924	Fr.	Cie. Gén. Transatlantique	552·1	71·4	42·3

* The registered dimensions are measured as follows : Length from fore part of stem at extreme top to aft side of head of stern post, or centre of rudder stock if a balanced rudder is fitted ; Breadth is taken to outside of plating ; Depth from top of beam at centre line of tonnage deck amidships to ceiling. If there is no ceiling it is measured to the tank top. If there are more than two decks, the tonnage deck is the second deck, counting from below.

† The speeds shown in this Table are as given by the owners.

LARGEST MERCHANT VESSELS OF THE WORLD—*continued.*

Gross tonnage.	Name.	Speed † (knots).	Date built.	Flag.	Owners.	L.* (ft.)	B.* (ft.)	D.* (ft.)
17,491	Aorangi (M.)	18½	1924	Br.	Union S.S. Co. of N.Z.	580·1	72·2	43·4
17,282	Montnairn	16½	1908	Br.	Canadian Pacific Co.	590·1	68·3	38·6
17,281	Minnekahda (T. & R.)	16	1917	U.S.	Atlantic Transport Co.	620·5	66·4	47·3
17,200	Malolo (T.)	?	1926	U.S.	American-Hawaiian S.S. Co.	554·0	83·0	54·0
17,149	Nieuw Amsterdam	16	1906	Holl.	Nederl. Amerikaansche S.M.	600·3	68·9	35·6
17,048	Conte Rosso (T.)	20	1922	Ital.	Lloyd Sabaudo	570·2	74·2	35·9
17,046	Caledonia (T.)	16½	1925	Br.	Anchor Line	553·0	70·4	38·7
16,991	Tuscania (T.)	16½	1922	Br.	Anchor Line	552·3	70·3	38·6
16,923	Transylvania (T.)	16½	1925	Br.	Anchor Line	552·4	70·3	30·3
16,909	Empress of Asia (T.)	20	1913	Br.	Canadian Pacific Co	570·1	68·2	42·0
16,810	Empress of Russia (T.)	20	1913	Br.	Canadian Pacific Co.	570·2	68·2	42·0
16,792	California (T.)	16½	1923	Br.	Anchor Line	553·0	70·4	38·8
16,786	Arabic	17	1908	Br.	Oceanic S.N. Co.	590·2	69·7	38·9
16,650	Ranchi	17½	1925	Br.	P. & O. S.N. Co.	548·5	71·3	43·2
16,619	Rawalpindi	17½	1925	Br.	P. & O. S.N. Co.	547·7	71·3	43·4
16,601	Ranpura	17½	1925	Br.	P. & O. S.N. Co.	548·3	71·3	43·2
16,568	Rajputana	17½	1926	Br.	P. & O. S. N. Co.	547·7	71·3	43·4
16,504	Mongolia (T.)	16	1923	Br.	P. & O. S. W. Co.	551·6	72·0	38·5
16,500	Regina (T. & R.)	16	1918	Br.	F. Leyland & Co.	575·3	67·8	41·2
16,484	Doric (T.)	16	1923	Br.	Oceanic S. N. Co.	575·5	67·9	41·2
16,449	Moldavia (T.)	16	1922	Br.	P. & O. S. N. Co.	552·4	71·7	38·4
16,418	Montcalm (T.)	17	1921	Br.	Canadian Pacific Co.	549·5	70·2	40·2
16,402	Montrose (T.)	17	1922	Br.	Canadian Pacific Co.	548·7	70·2	40·3
16,365	Cameronia (T.)	16½	1920	Br.	Anchor Line	552·4	70·4	38·8
16,322	Pennland (T. & R.)	16	1922	Br.	International Nav. Co.	575·4	67·8	41·2
16,314	Montclare (T.)	17	1922	Br.	Canadian Pacific Co.	549·5	70·2	40·2
16,243	Lancastria (T.)	16½	1922	Br.	Cunard Co.	552·8	70·4	38·8
16,227	Narkunda	18½	1920	Br.	P. & O. S. N. Co.	581·4	69·4	27·7
16,063	Orca (T. & R.)	15	1918	Br.	Royal Mail Co..	550·3	67·3	43·0
15,993	Naldera	18½	1918	Br.	P. & O. S.N. Co.	580·9	67·2	44·4
15,746	Cleveland	15	1908	Panama	Atlantic Mail Corp.	588·9	65·3	46·7
15,646	Montroyal	18	1906	Br.	Canadian Pacific Co.	548·8	65·7	36·7
15,620	Andes (T. & R.)	17	1913	Br.	Royal Mail Co..	570·3	67·3	33·3
15,551	Almanzora (T. & R.)	17	1914	Br.	Royal Mail Co..	570·0	67·3	33·3
15,499	Orduña (T. & R.)	15	1914	Br.	Royal Mail Co..	550·3	67·3	43·0
15,486	Orbita (T. & R.)	15	1915	Br.	Royal Mail Co..	550·3	67·3	43·0
15,450	Veendam (T.)	15	1923	Holl.	Holland-Amerika Lijn	550·2	67·3	41·1
15,445	Manchuria	16	1904	U.S.	Atlantic Transport Co.	600·0	65·3	31·1
15,442	Mongolia	16	1904	U.S.	Atlantic Transport Co.	600·0	65·3	31·1
15,434	Volendam (T.)	15	1922	Holl.	Holland Amerika Lijn	550·2	67·3	32·6
15,371	G. Harrison-Smith	?	1921	Br.	International Petroleum Co.	550·6	72·3	44·1
15,355	Amerikaland (M.)	?	1925	Swed.	Augf. Akt. Tirfing	561·3	72·2	44·1
15,335	Svealand (M.)	?	1925	Swed.	Augf. Akt. Tirfing	561·3	72·2	44·1
15,286	Berlin	16	1925	Ger.	Norddeutscher Lloyd	549·3	69·2	34·8
15,248	Chitral	16	1925	Br.	P. & O. S. N. Co.	526·3	70·3	42·3
15,186	Minnedosa (T. & R.)	16½	1918	Br.	Canadian Pacific Co.	520·0	67·2	41·8
15,183	Melita (T. & R.)	16½	1918	Br.	Canadian Pacific Co.	520·0	67·2	50·3
15,147	Massilia (T. & R.)	20	1920	Fr.	Cie. de Nav. Sud Atlantique	577·1	64·1	37·0
15,116	Comorin	16	1925	Br.	P. & O. S. N. Co.	523·5	70·2	42·3
15,105	D'Artagnan	?	1924	Fr.	Messageries Maritimes	543·5	65·0	41·4
15,104	Cathay	16	1925	Br.	P. & O. S. N. Co.	523·5	70·2	42·3
15,000	Pieter Corneliszoon Hooft (M.)	?	1925	Holl.	"Nederland" S. M.	541·3	67·8	46·5
14,947	Euripides (T. & R.)	15	1914	Br.	G. Thompson & Co.	550·7	67·4	44·1
14,930	Arlanza (T. & R.)	17	1912	Br.	Royal Mail Co..	570·3	65·3	33·3
14,878	Megantic	17	1909	Br.	Oceanic S. N. Co.	550·4	67·3	41·2
14,853	Ormonde (T.)	18	1917	Br.	Orient S. N. Co.	580·5	66·7	40·5
14,825	Chenonceaux (T.)	?	1922	Fr.	Messageries Maritimes	543·4	65·1	41·1
14,654	Lutetia (T. & R.)	20	1913	Fr.	Cie. de Nav. Sud Atlantique	579·0	64·1	36·7
14,652	Ulysses	14	1913	Br.	China Mutual S. N. Co.	563·2	68·4	40·2
14,588	Ormuz	16	1914	Br.	Orient S. N. Co.	550·0	67·3	35·1
14,547	Nestor	14	1913	Br.	Ocean S.S. Co.	563·2	68·4	31·2
14,457	Taiyo Maru	16	1911	Jap.	Govt. of Japan.	560·0	65·3	31·2
14,187	President Lincoln (T.)	17	1921	U.S.	Robert Dollar Co.	516·5	72·2	27·8
14,187	President Madison (T.)	17	1921	U.S.	Admiral Oriental Line	516·5	72·2	27·8
14,187	President Roosevelt (T.)	18	1922	U.S.	U.S.S.B.	516·5	72·2	27·8
14,174	President Jefferson (T.)	17	1920	U.S.	Admiral Oriental Line	516·5	72·2	27·8
14,127	President McKinley (T.)	17	1921	U.S.	Admiral Oriental Line	516·5	72·2	27·8
14,127	President Wilson (T.)	17	1921	U.S.	Robert Dollar Co.	516·5	72·2	27·8
14,124	President Jackson (T.)	17	1921	U.S.	Admiral Oriental Line	517·0	72·2	27·8
14,123	President Cleveland (T.)	17	1921	U.S.	Robert Dollar Co.	517·0	72·2	36·8
14,123	President Pierce (T.)	17	1921	U.S.	Robert Dollar Co.	517·0	72·2	27·8
14,123	President Taft (T.)	17	1921	U.S.	Robert Dollar Co.	517·0	72·2	27·8
14,119	President Grant (T.)	17	1921	U.S.	Admiral Oriental Line	517·0	72·2	27·8
14,072	Oropesa (T.)	14	1920	Br.	Pacific S.W. Co.	530·0	66·3	41·2
14,054	John D. Archbold	?	1921	U.S.	Standard Oil Co.	570·2	75·1	42·6

† * See notes on p. 430.

LARGEST MERCHANT VESSELS OF THE WORLD—*continued.*

Gross tonnage.	Name.	Speed † (knots.)	Date built.	Flag.	Owners.	L.* (ft.)	B.* (ft.)	D.* (ft.)
14,054	William Rockefeller	?	1921	U.S.	Standard Oil Co.	554·9	75·3	43·0
14,030	Alaunia (T.)	15	1925	Br.	Cunard Co.	519·6	65·2	39·2
14,013	Ascania (T.)	15	1925	Br.	Cunard Co.	520·0	65·3	39·0
13,984	Aurania (T.)	15	1924	Br.	Cunard Co.	519·7	65·3	39·2
13,950	Andania (T.)	15	1922	Br.	Cunard Co.	520·2	65·3	39·2
13,912	Ausonia (T.)	15	1921	Br.	Cunard Co.	520·0	65·3	39·1
13,869	President Harding (T.)	18	1921	U.S.	U.S.S.B.	516·5	72·2	27·8
13,868	Gelria	16	1913	Holl.	Hollandsche Lloyd	541·1	65·8	35·3
13,867	Antonia (T.)	15	1921	Br.	Cunard Co.	519·9	65·3	39·1
13,856	Esperance Bay (T.)	15	1922	Br.	Australian Comm. Line	530·9	68·3	39·9
13,855	Moreton Bay (T.)	15	1921	Br.	Australian Comm. Line	530·6	68·3	39·9
13,853	Largs Bay (T.)	15	1921	Br.	Australian Comm. Line	530·9	68·3	39·9
13,840	Hobson's Bay (T.)	15	1922	Br.	Australian Comm. Line	530·6	68·3	39·9
13,839	Jervis Bay (T.)	15	1922	Br.	Australian Comm. Line	530·6	68·3	39·9
13,800	Athos II. (T.)	?	1925	Fr.	Messageries Maritimes	541·3	66·0	?
13,789	Southern Cross (T.)	17	1920	U.S.	Munson S.S. Line	516·5	72·2	27·8
13,750	Monte Olivia (M.)	14½	1924	Ger.	Hamburg Sud-Amer. Ges.	500·6	65·8	37·9
13,736	American Legion (T.)	17	1920	U.S.	Munson S.S. Line	516·5	72·2	27·8
13,712	Pan America (T.)	17	1921	U.S.	Munson S.S. Line	517·0	72·2	27·8
13,712	Western World (T.)	17	1921	U.S.	Munson S.S. Line	517·0	72·2	41·0
13,682	André Lebon	14	1913	Fr.	Messageries Maritimes	508·2	61·6	45·8
13,625	Monte Sarmiento (M.)	14½	1924	Ger.	Hamburg Sud-Amer. Ges.	500·6	65·8	37·9
13,615	Cap Norte	14	1922	Ger.	Hamburg Sud-Amer. Ges.	499·5	64·0	38·7
13,589	Antonio Delfino	14	1921	Ger.	Hamburg Sud-Amer. Ges.	499·5	64·0	38·7
13,483	München	16	1922	Ger.	Norddeutscher Lloyd	526·9	65·0	34·7
13,475	Letitia (T.)	15½	1925	Br.	Anchor-Donaldson	525·7	66·4	29·5
13,465	Athenia (T.)	15½	1923	Br.	Anchor-Donaldson	526·3	66·4	38·1
13,415	Niagara (T. & R.)	18	1913	Br.	Union S.S. Co. of N.Z.	524·7	66·3	34·5
13,401	Tenyo Maru (T.)	16	1908	Jap.	Nippon Yusen Kaisha	558·0	61·9	35·5
13,367	Stuttgart	16	1923	Ger.	Norddeutscher Lloyd	527·0	65·0	34·7
13,361	Balmoral Castle	17	1910	Br.	Union Castle Co.	570·0	64·5	38·9
13,330	Edinburgh Castle	17	1910	Br.	Union Castle Co.	570·2	64·7	38·7
13,248	Voltaire	14½	1923	Br.	Lamport & Holt, Ltd.	510·6	64·3	39·3
13,233	Vandyck (T.)	14½	1921	Br.	Lamport & Holt, Ltd.	510·6	64·3	39·3
13,156	Stavangerfjord	16	1918	Nor.	Norske Amerikalinje	532·5	64·2	29·3
13,154	Chilore (T.)	?	1922	U.S.	Guaranty Trust Co.	549·6	72·2	40·5
13,148	Barrabool	14½	1922	Br.	P. & O. Co.	519·9	64·4	37·8
13,144	Baradine	14½	1921	Br.	P. & O. Co.	519·9	64·4	37·8
13,056	San Fernando (T.)	?	1919	Br.	Eagle Oil Transport Co.	530·4	69·4	42·2
13,039	Balranald	14½	1922	Br.	P. & O. Co.	519·8	64·2	29·8
13,039	Bendigo	14½	1922	Br.	P. & O. Co.	519·8	64·2	37·8
13,039	Shinyo Maru (T.)	16	1911	Jap.	Toyo Kisen Kaisha	558·0	61·9	35·5
13,037	San Felix (T.)	?	1921	Br.	Eagle Oil Transport Co.	530·4	69·4	42·2
13,033	Ballarat	14½	1921	Br.	P. & O. Co.	519·8	64·2	37·8
13,031	San Fabian (T.)	?	1922	Br.	Eagle Oil Transport Co.	530·5	69·4	42·2
12,989	Paul Lecat	14	1911	Fr.	Messageries Maritimes	510·7	61·6	42·0
12,975	Kenilworth Castle	17	1904	Br.	Union Castle Co.	570·2	64·7	38·7
12,973	Armadale Castle	17	1903	Br.	Union Castle Co.	570·1	64·5	39·0
12,915	San Gerardo (T.)	?	1922	Br.	Eagle Oil Transport Co.	530·2	68·5	42·1
12,910	San Gaspar (T.)	?	1921	Br.	Eagle Oil Transport Co.	530·2	68·5	42·1
12,842	San Florentino (T.)	?	1919	Br.	Eagle Oil Transport Co.	530·4	68·6	42·0
12,835	Stockholm	15½	1900	Swed.	Svenska Amerika Linien	547·1	62·1	34·6
12,768	Albania (T.)	14	1920	Br.	Cunard Co.	523·1	64·0	43·9
12,692	Porthos	13½	1914	Fr.	Messageries Maritimes	510·8	61·6	42·1
12,686	Suevic	13	1901	Br.	Oceanic S.N. Co.	550·2	63·3	39·9
12,678	Rochambeau (T. & R.)	16½	1911	Fr.	Cie. Gén. Transatlantique	559·4	63·7	43·3
12,663	Runic	13	1900	Br.	Oceanic S.N. Co.	550·2	63·3	39·9
12,642	City of Los Angeles	16	1899	U.S.	Los Angeles S.S. Co.	560·6	62·3	35·9
12,578	Presidente Wilson	17	1912	Ital.	Soc. Triestino "Cosulich"	477·5	60·2	43·2
12,546	Walmer Castle	17	1902	Br.	Union Castle Co.	570·5	64·4	38·6
12,535	Rijndam	15	1901	Holl.	Holland-Amerika Lijn	550·3	62·3	26·2
12,528	Noordam	15	1902	Holl.	Holland-Amerika Lijn	550·3	62·3	34·0
12,500	Mariette Pacha	?	1925	Fr.	Messageries Maritimes	508·5	62·6	43·6
12,420	Metagama	16	1915	Br.	Canadian Pacific Co.	500·4	64·2	37·9
12,385	Saxon	17	1900	Br.	Union Castle Co.	570·5	64·4	38·6
12,367	Corinthic	13	1902	Br.	Oceanic S.N. Co.	500·3	63·3	45·0
12,366	Athenic	13	1901	Br.	Oceanic S.N. Co.	500·3	63·3	45·0
12,354	Sophocles (T.)	15	1922	Br.	G. Thompson & Co.	500·4	63·2	39·6
12,352	Ionic	13	1902	Br.	Oceanic S.N. Co.	500·3	63·3	45·0
12,341	Diogenes (T.)	15	1922	Br.	G. Thompson & Co.	500·4	63·2	39·6
12,286	San Melito	?	1914	Br.	Eagle Oil Transport Co.	530·0	66·5	33·5
12,263	Champollion	?	1924	Fr.	Messageries Maritimes	495·1	62·7	40·5
12,257	Oroya (T.)	14	1923	Br.	Pacific S.N. Co.	525·3	62·8	32·1
12,222	Medic	13	1899	Br.	Oceanic S.N. Co.	550·2	63·3	39·9
12,221	Persic	13	1899	Br.	Oceanic S.N. Co.	550·2	63·3	39·9

† * See notes on p. 430.

LARGEST MERCHANT VESSELS OF THE WORLD—*continued.*

Gross tonnage.	Name.	Speed † (knots).	Date built.	Flag.	Owners.	L.* (ft.)	B.* (ft.)	D.* (ft.)
12,220	Lafayette (T. & R.)	18½	1915	Fr.	Cie. Gén. Transatlantique	546·7	64·0	34·8
12,184	Osterley	18	1909	Br.	Orient S.N. Co.	535·0	63·2	34·1
12,153	Devonian	15	1902	Br.	F. Leyland & Co.	582·0	60·3	38·3
12,133	Orvieto	18	1909	Br.	Orient S.N. Co.	535·3	64·0	38·6
12,112	Rotorua	15	1911	Br.	Federal S.N. Co.	526·4	61·4	33·3
12,097	San Lorenzo	?	1914	Br.	Eagle Oil Transport Co.	527·5	66·6	42·0
12,094	C. A. Larsen	?	1913	Nor.	Hvalfanger A/S Rosshavet	527·2	66·6	33·9
12,074	Cadillac	?	1917	Br.	Anglo-American Oil Co.	530·2	66·3	33·8
12,070	Saranac	?	1918	Br.	Anglo-American Oil Co.	530·5	66·3	42·7
12,041	Orsova	18	1909	Br.	Orient S.N. Co.	536·2	63·3	34·3
12,029	San Nazario	?	1914	Br.	Eagle Oil Transport Co.	525·5	66·5	41·4
12,028	San Jeronimo	?	1914	Br.	Eagle Oil Transport Co.	525·5	66·5	33·9
12,015	Arcadian	16½	1908	Br.	Royal Mail Co.	520·3	62·3	31·8
12,003	Colombo	17	1917	Ital.	Nav. Gen. Italiana	518·0	64·0	24·2
11,996	Providence	17	1915	Fr.	Cie. Fr. de N. (Cyp. Fabre)	511·8	59·7	43·5
11,949	Argyllshire	14	1911	Br.	Turnbull, Martin & Co.	526·2	61·4	33·3
11,948	Suffren	15	1901	Fr.	Cie. Gén. Transatlantique	528·0	62·3	34·7
11,941	Finland	?	1902	U.S.	International Mer. Mar. Corp.	560·0	60·2	38·4
11,933	Kroonland	?	1902	U.S.	International Mer. Mar. Corp.	560·0	60·2	38·4
11,929	San Fraterno	?	1913	Br.	Eagle Oil Transport Co.	527·3	66·6	42·7
11,885	Patria	17	1913	Fr.	Cie. Fr. de N. (Cyp. Fabre)	487·2	59·2	40·1
11,877	San Patricio	?	1915	Br.	Eagle Oil Transport Co.	530·0	66·6	33·5
11,850	Frederick VIII.	17	1913	Den.	Forenede Damps. S.	523·5	62·3	38·3
11,810	Korea Maru	16	1901	Jap.	Toyo Kisen Kaisha	551·7	63·2	40·8
11,796	Mahana (T.)	13½	1917	Br.	Shaw Savill & Albion Co.	500·9	63·3	39·6
11,790	Siberia Maru	16	1901	Jap.	Toyo Kisen Kaisha	551·7	63·2	21·8
11,692	Jan Pieterszoon Coen	15	1915	Holl.	"Nederland" S. M.	503·2	60·5	35·8
11,667	Zeeland	16	1901	Br.	International Nav. Co.	561·6	60·2	38·2
11,577	Orcoma	14½	1908	Br.	Pacific S. N. Co.	511·6	62·2	29·1
11,540	Northumberland (T.)	15	1915	Br.	Federal S. N. Co.	530·5	63·0	31·9
11,484	Darro	13½	1912	Br.	Royal Mail Co..	500·7	62·3	40·2
11,484	Demerara	13½	1912	Br.	Royal Mail Co.	500·7	62·3	40·2
11,483	Desna	13½	1912	Br.	Royal Mail Co..	500·7	62·3	40·2
11,477	Deseado	13½	1912	Br.	Royal Mail Co..	500·7	62·3	40·2
11,469	Sierra Cordoba	14½	1923	Ger.	Norddeutscher Lloyd	490·5	61·8	34·3
11,455	King Alexander	15	1896	Br.	Byron S.S. Co.	550·5	60·2	34·9
11,446	Philoctetes (T.)	14	1922	Br.	China Mutual S.N. Co.	511·9	63·2	41·1
11,430	Kaisar-i-Hind	18½	1914	Br.	P. & O. S. N. Co.	520·0	61·2	33·1
11,430	Sierra Morena	14½	1924	Ger.	Norddeutscher Lloyd	490·5	61·8	34·3
11,426	Achilles (T.)	14	1920	Br.	Ocean S.S. Co.	507·4	63·2	41·1
11,406	Slamat (T.)	15	1923	Holl.	Rotterdamsche Lloyd	482·5	62·0	35·0
11,397	Transbalt	?	1899	Russ.	Govt. Black & Azov Seas S.S. Co.	501·1	62·2	46·3
11,392	Sierra Ventana	14½	1923	Ger.	Norddeutscher Lloyd	490·5	61·8	34·3
11,375	Sphinx	14½	1914	Fr.	Messageries Maritimes	478·0	60·7	40·6
11,347	Tyndareus	14	1916	Br.	Ocean S.S. Co.	507·0	63·2	41·6
11,346	Esperia (T.)	21	1918	Ital.	Soc. Ital. di Serv. Marittimi	492·1	61·7	34·1
11,343	Thuringia (T.)	13½	1922	Ger.	Hamburg-Amerika Linie	473·6	60·7	41·9
11,343	Westphalia (T.)	13½	1923	Ger.	Hamburg-Amerika Linie	473·6	60·7	41·9
11,337	Cuba (T.)	16	1923	Fr.	Cie. Gén. Transatlantique	476·0	62·3	35·1
11,321	Sarpedon (T.)	15	1923	Br.	Ocean S.S. Co.	499·0	62·3	34·9
11,314	Patroclus (T.)	15	1923	Br.	China Mutual S.N. Co.	498·8	62·3	26·4
11,309	Montrolite (M.)	?	1926	Br.	Imperial Oil ,Ltd.	510·9	68·2	37·9
11,300	Canadolite (M.)	?	1926	Br.	Imperial Oil, Ltd.	510·0	68·0	38·0
11,293	Llanstephan Castle	14	1914	Br.	Union Castle Co.	500·5	63·3	37·2
11,243	Hororata	14	1914	Br.	New Zealand Shipping Co.	511·1	64·2	32·0
11,231	Themistocles	15	1911	Br.	G. Thompson & Co.	500·6	62·3	39·4
11,223	Demosthenes (T. & R.)	15	1911	Br.	G. Thompson & Co.	500·6	62·3	39·4
11,202	Berrima	14½	1913	Br.	P. & O. Co..	500·1	62·2	37·8
11,199	Borda	14½	1914	Br.	P. & O. Co..	500·0	62·2	37·8
11,198	Hector (T.)	15	1924	Br.	Ocean S.S. Co., Ltd.	498·8	62·3	26·4
11,182	Drottningholm (T.)	16½	1905	Swed.	Svenska Amerika Linien	517·0	60·0	38·0
11,181	Benalla	14½	1913	Br.	P. & O. Co..	500·1	62·2	29·8
11,174	Antenor (T.)	15	1925	Br.	China Mutual S.N. Co.	497·7	62·2	35·0
11,170	Tamiahua	?	1921	U.S.	Southern Pacific S.S. Lines	500·0	71·2	31·2
11,168	La Savoie	21	1900	Fr.	Cie. Gén. Transatlantique	563·1	60·0	35·9
11,167	Beltana	14½	1912	Br.	P. & O. Co..	500·1	62·2	37·8
11,158	Remuera	14	1911	Br.	New Zealand Shpg. Co.	485·0	62·3	41·0
11,155	Espagne	18½	1909	Fr.	Cie. Gén. Transatlantique	537·8	60·8	39·0
11,103	Edison	13	1896	Br.	Byron S.S. Co.	523·1	60·1	34·9
11,089	Macedonia	18	1904	Br.	P. & O. S.N. Co.	530·4	60·4	25·5
11,081	Achilles	?	1915	U.S.	Panama Canal	514·0	65·2	36·5
11,073	Avon	16½	1907	Br.	Royal Mail Co..	520·3	62·3	31·8
11,013	Bergensfjord	16	1913	Nor.	Norske Amerikalinje	512·4	61·2	29·4
10,951	Huntingdon	14	1920	Br.	Federal S.N. Co.	520·7	64·2	38·1

† * See notes on p. 430.

LARGEST MERCHANT VESSELS OF THE WORLD—*continued.*

Gross tonnage.	Name.	Speed † (knots).	Date built.	Flag.	Owners.	L.* (ft.)	B.* (ft.)	D.* (ft.)
10,946	Norfolk	14	1918	Br.	Federal S.N. Co.	520·7	64·2	38·1
10,941	Malwa	18	1908	Br.	P. & O. S.N. Co.	540·0	61·3	24·6
10,937	Cumberland	14	1919	Br.	Federal S.N. Co.	520·0	64·2	29·0
10,936	Fushimi Maru	14½	1914	Jap.	Nippon Yusen Kaisha	513·0	63·5	37·5
10,923	Hertford	14	1917	Br.	Federal S.N. Co.	520·7	64·2	38·1
10,918	Morea	18	1908	Br.	P. & O. S.N. Co.	540·0	61·2	24·7
10,910	Ulysses	?	1915	U.S.	Panama Canal	514·0	65·2	36·5
10,902	City of Paris (T.)	14½	1922	Br.	City Line, Ltd.	484·7	59·3	32·6
10,902	Mantua	18	1909	Br.	P. & O. S. N. Co.	540·0	61·3	24·6
10,900	Llandaff Castle	14½	1926	Br.	Union Castle Co.	471·1	61·7	39·0
10,893	Robert Dollar	13	1920	Br.	Dollar S.S. Lines, Ltd.	523·5	65·7	37·5
10,867	Amsterdam (T.)	?	1921	Holl.	Nederlandsche S.M.	474·4	65·6	40·8
10,850	Cambridge	14	1916	Br.	Federal S.N. Co.	524·5	65·7	37·3
10,836	Tjibesar (T.)	12	1922	Holl.	Java-China-Japan Lijn	500·1	63·7	39·2
10,833	Cristobal Colon (T.)	17	1922	Sp.	Cia Trasatlantica	499·4	61·0	32·3
10,831	Vancolite	?	1921	Br.	Imperial Oil, Ltd.	500·3	68·0	30·5
10,826	Bremen	15½	1900	Ger.	Norddeutscher Lloyd..	523·5	60·2	34·7
10,772	Indrapoera (M.)	15	1925	Holl.	Rotterdamsche Lloyd	479·5	60·2	35·1
10,743	Marburn	15	1900	Br.	Allan Line	500·6	59·2	39·8
10,725	Andrea F. Luckenbach (T.)	13	1919	U.S.	Luckenbach S.S. Co.	496·0	68·2	37·2
10,720	Ruahine	14	1909	Br.	New Zealand Shpg. Co.	480·6	60·3	32·1
10,700	Stuartstar (T.)	?	1926	Br.	Blue Star Line	?	?	?
10,687	Marloch (T.)	15	1904	Br.	Allan Line	520·0	60·4	38·0
10,672	Suwa Maru	14½	1914	Jap.	Nippon Yusen Kaisha	516·0	62·6	34·9
10,662	Lewis Luckenbach (T.)	13	1919	U.S.	Luckenbach S.S. Co.	496·0	68·0	40·0
10,660	Vauban	13½	1912	Br.	Lamport & Holt, Ltd.	495·5	60·8	28·7
10,616	Cornwall (T.)	14	1920	Br.	Federal S. N. Co.	495·1	63·1	40·3
10,609	Llandovery Castle	14½	1925	Br.	Union Castle Co.	471·1	61·7	39·0
10,602	Razmak	19	1925	Br.	P. & O. S. N. Co.	500·4	63·2	34·0
10,600	Rodneystar (T.)	?	1926	Br.	Blue Star Line	475·9	67·3	36·6
10,558	President Adams	14	1921	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,558	President Garfield	14	1921	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,551	Alfonso XIII. (T.)	17	1921	Sp.	Cia. Trasatlantica	?	?	?
10,533	President Harrison	14	1921	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,533	President Hayes	14	1920	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,533	President Monroe	14	1920	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,533	President Van Buren	14	1920	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,519	Johan de Witt	15	1920	Holl.	"Nederland" S.M.	482·2	59·2	34·8
10,502	Chicago	16	1908	Fr.	Cie. Gén. Transatlantique	508·4	57·8	39·5
10,500	President Polk	14	1921	U.S.	Robert Dollar Co.	502·1	62·2	28·3
10,500	Shropshire (M.)	?	1926	Br.	Bibby S.S. Co.	482·0	60·0	36·3
10,494	Vestris	13½	1912	Br.	Lamport & Holt, Ltd.	495·5	60·8	28·7
10,484	Italia	15½	1899	Ital.	Banco di San Giorgio	499·3	60·2	34·6
10,441	Doricstar (T.)	12½	1921	Br.	Blue Star Line	499·8	64·0	37·0
10,428	Winifredian	14	1899	Br.	F. Leyland & Co.	552·5	59·3	28·9
10,421	Haruna Maru (T.)	15½	1922	Jap.	Nippon Yusen Kaisha	495·0	62·0	37·0
10,420	Hakone Maru (T.)	15½	1921	Jap.	Nippon Yusen Kaisha	495·0	62·0	37·0
10,417	Marglen	15	1898	Br.	Allan Line	515·3	59·8	23·8
10,413	Hakozaki Maru (T.)	15½	1922	Jap.	Nippon Yusen Kaisha	495·0	62·0	37·0
10,389	Waimana	13½	1911	Br.	Shaw, Savill & Albion Co.	477·6	63·1	31·3
10,388	Agwismith	?	1921	U.S.	Atlantic Gulf and W. Indies S.S. Lines	500·0	68·2	29·3
10,388	Agwistone	?	1921	U.S.	Ditto	500·0	68·2	29·3
10,380	Hakusan Maru (T.)	15½	1923	Jap.	Nippon Yusen Kaisha	495·0	62·0	37·0
10,354	Diomed (T.)	14	1922	Br.	China Mutual S.N. Co.	491·0	62·4	31·1
10,348	Infanta Isobel de Borbon (T. & R.)	17	1913	Sp.	Cia. Trasatlantica	481·9	61·3	32·7
10,343	Glenmohr	?	1926	Br.	Steamships, Ltd.	620·0	?	?
10,304	Calchas (T.)	14	1921	Br.	Ocean S.S. Co.	490·8	62·4	39·6
10,278	Menelaus (T.)	14	1923	Br.	Ocean S.S. Co.	495·5	62·3	39·6
10,276	Perseus (T.)	14	1923	Br.	China Mutual S.N. Co.	490·5	62·3	39·6
10,263	White Palace	16	1900	U.S.	Palace Line	523·5	60·1	34·7
10,248	Briton	17	1897	Br.	Union Castle Co.	530·3	60·3	36·2
10,241	Exploration Grandidier	?	1924	Fr.	Messageries Maritimes	455·8	60·7	41·1
10,229	Ixion	14	1912	Br.	China Mutual S.N. Co.	506·0	60·3	39·5
10,224	Talthybius	14	1912	Br.	Ocean S.S. Co.	506·0	60·3	39·5
10,222	Kamoi (T.E.)	?	1922	Jap.	Govt. of Japan (Navy Dept.)	478·7	67·3	38·1
10,196	Araguaya	16½	1906	Br.	Royal Mail Co..	515·2	61·3	30·5
10,184	Yorkshire (T.)	15	1920	Br.	Bibby S.S. Co.	482·4	58·3	40·4
10,171	Flandria (T.)	14	1922	Holl.	Hollandsche Lloyd	450·1	59·2	41·7
10,138	City of Nagpur	14	1922	Br.	City Line, Ltd.	469·9	59·3	40·0
10,137	Reina Victoria-Eugenia (T. & R.)	17	1913	Sp.	Cia. Trasatlantica	480·0	61·3	40·7
10,123	Meduana (T.)	13½	1922	Fr.	Cie. de Nav. Sud Atlantique	484·2	59·3	35·0
10,123	Mosella (T.)	13½	1922	Fr.	Cie. de Nav. Sud Atlantique	484·2	59·3	27·2

† * See notes on p. 430.

LARGEST MERCHANT VESSELS OF THE WORLD—*continued.*

Gross tonnage.	Name.	Speed † (knots).	Date built.	Flag.	Owners.	L.* (ft.)	B.* (ft.)	D.* (ft.)
10,121	General Belgrano	?	1913	Ger.	Akt. Ges. Hugo Stinnes . .	491·6	59·1	35·6
10,117	Vasari	12	1909	Br.	Lamport & Holt, Ltd. . .	486·0	59·3	27·4
10,058	Aeneas	14	1910	Br.	Ocean S.S. Co.	493·0	60·4	28·6
10,048	Ascanius	14	1910	Br.	Ocean S.S. Co.	493·0	60·4	28·6
10,012	Oscar II.	16	1901	Den.	Forenede Damps. S. . . .	500·8	58·3	37·6
10,006	Tilawa	12	1924	Br.	British India S.N. Co. . .	451·0	59·3	36·8
10,000	Anchises	14	1911	Br.	Ocean S.S. Co.	493·0	60·4	28·6
10,000	Ausonia (T.)	?	1921	?	Blohm & Voss	491·0	61·7	39·2
10,000	Bernardin de Saint Pierre (T.)	?	1925	Fr.	Messageries Maritimes . .	452·8	61·0	41·0
10,000	Talma	12	1923	Br.	British India S. N. Co. . .	451·0	59·3	36·8

† * See notes on p. 430.

NUMBER AND TONNAGE OF MOTOR VESSELS (EXCLUDING VESSELS FITTED WITH AUXILIARY MOTORS) OWNED BY VARIOUS NATIONS.

	June, 1922.		June, 1923.		June, 1924.		June, 1925.	
	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.
Gt. Brit. & Ireland	214	355,461	139	374,873	173	507,251	220	733,734
British Dominions	99	36,973	44	14,084	58	17,659	69	37,272
United States * .	142	183,083	101	142,965	124	191,703	132	216,889
Denmark . . .	104	165,810	40	132,542	47	167,763	56	171,964
France . . .	65	33,656	34	27,958	27	25,892	27	34,824
Germany . . .	99	73,127	45	84,528	61	113,555	78	233,612
Holland . . .	95	75,684	52	66,577	55	69,450	64	124,262
Italy	91	88,330	34	61,374	33	73,165	41	124,901
Japan	8	6,090	20	4,375	26	6,718	42	41,376
Norway . . .	240	197,973	130	177,071	126	192,002	156	324,567
Spain . . .	47	18,104	8	13,378	15	16,800	17	18,442
Sweden . . .	160	166,679	103	173,697	117	195,960	120	259,900
Other countries .	224	144,293	69	42,509	85	59,228	88	67,501
World's total *.	1,588	1,535,263	819	1,315,931	947	1,637,346	1,110	2,389,244

* Excluding American Great Lakes vessels.

NUMBERS OF VESSELS CLASSED BY VARIOUS CLASSIFICATION SOCIETIES.*

Society.	1913.	1919.	1921.	1923.	1924.	1925.	1926.
Lloyd's Register	10,466	9175	10,154	10,296	10,053	9973	9950
British Corporation	876	1002	1190	1306	1234	1253	1317
American Bureau of Shipping: Record of American and Foreign Shipping	846	926	2216	2392	2226	2131	1886
American Bureau of Shipping: Gt. Lakes Register	572	442	392	416	382	383	381
Bureau Veritas	5165	5706	6387	4998	4903	5135	5553
Norske Veritas	1504	955	1109	1242	1244	1220	1306
Registro Italiano	1442	699	1280	1872	1901	1826	1564
Germanischer Lloyd	2848	—‡	2219	2799	2894	2855	2848
Veritas Adriatico	1146	516	471	†	†	†	†

* Many vessels, of course, are not exclusively classed in one Register.
† The Veritas Adriatico is now amalgamated with the Registro Italiano.
‡ No data available.

FLUCTUATIONS IN THE PRICE OF A NEW, READY, 7,500-TON (D.W.)† CARGO STEAMER.

Period.	£	Price per ton (D.W.) £
1898 (Sept.)	48,500	6·7
1900 (Nov.)	60,630*	8·4
1905 (June)	36,500	5·0
1908 (June)	**36,000**	**4·9**
1910 (Jan.)	39,000	5·3
1912 (Nov.)	58,000	7·7
1914 (June)	42,500	5·7
1915 (Jan.)	60,000	8·0
1915 (June)	82,500	11·0
1915 (Sept.)	93,750	12·5
1916 (Jan.)	125,000	16·7
1916 (June	180,000	24·0
1916 (Dec.)	187,500	25·0
1918 (Jan.)	165,000	22·0
1918 (June)	180,500	24·1
1919 (Jan.)	169,000	22·5
1919 (June)	195,000	26·0
1920 (Jan.)	232,500	31·0
1920 (March)	**258,750**	**34·5**
1920 (June)	180,000	24·0
1921 (Jan.)	105,000	14·0
1921 (June)	63,750	8·5
1922 (Jan.)	60,000	8·0
1922 (June)	62,000	8·3
1923 (Jan.)	65,625	8·8
1923 (June)	62,500	8·3
1924 (Jan.)	60,000	8·0
1924 (June)	60,000	8·0
1925 (Jan.)	61,500	8·2
1925 (June)	55,500	7·4
1926 (Jan.)	52,500	7·0
1926 (June)	52,500	7·0

Compiled from "Fairplay," July 8, 1926.

NOTE.—The highest and lowest prices are given in heavy type.

* Highest pre-war figure.

† The table is now based on a single-deck steamer of very plain specification, built to Lloyd's Register latest rules, partly of continental steel, with no deep tank, donkey boiler, or Grain Act requirements; length 380 ft., breadth 49 ft., depth 29 ft., carrying 7500 tons deadweight at 10½ knots on 23′ 8″ draught.

From 1898 to 1906 the vessel used was 360 ft. long by 48 ft. beam by 30′ 10″ depth, carrying 7000 to 7250 tons deadweight on 24′ 6″ draught. In 1906 the revised Board of Trade rules enabled the freeboard to be reduced, thus increasing the deadweight by 60 to 80 tons, while in 1910 changes in the Rules of Lloyd's Register of Shipping permitted of lighter scantlings, adding an additional 150 tons to the deadweight.

NUMBER AND TONNAGE OF MERCHANT VESSELS LAUNCHED.*

	1913.		1919.		1921.		1923.		1924.		1925.	
	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.
Gt. Britain and Ireland	688	1,932,153	612	1,620,442	426	1,538,052	222	645,651	494	1,439,885	342	1,084,633
British Dominions †	77	26,744	235	298,495	49	118,303	41	37,072	29	29,815	47	32,320
United States †	182	228,232	852	3,579,826	166	995,129	69	96,491	71	90,155	94	78,766
Austria-Hungary	17	61,757	—	—	—	—	—	—	—	—	—	—
Denmark	31	40,932	46	37,766	37	77,238	24	49,479	33	63,937	21	73,268
France	89	176,095	34	32,633	65	210,663	27	96,644	26	79,685	35	75,569
Germany	162	465,226	No returns.		242	509,064	109	345,062	108	175,113	121	406,374
Holland	95	104,296	100	137,086	98	232,402	35	65,632	41	63,627	47	78,823
Italy	38	50,356	32	82,713	85	164,748	21	66,523	19	82,526	31	142,046
Japan	152	64,664	133	611,883	43	227,425	44	72,475	31	72,757	23	55,784
Norway	74	50,637	82	57,578	35	51,458	48	42,619	34	25,139	48	28,805
Russia	10	3,300	—	—	—	—	—	—	—	—	—	—
Spain	12	8,488	41	52,609	11	47,256	7	4,488	2	3,859	1	127
Sweden	25	18,524	53	50,971	27	65,911	10	20,118	12	31,211	17	53,750
Other Countries	71	34,967	36	26,755	81	81,374	27	20,410	14	25,670	17	19,371
World's Total	1713	3,282,071	2256	6,588,757	1365	4,319,023	684	1,562,664	914	2,183,379	844	2,129,536

* Figures given include all steamers, motorships, and sailing vessels of 100 gross tons and upwards.

† Excluding vessels built at ports on the Great Lakes of America.

MERCHANT VESSELS UNDER CONSTRUCTION.*

	1913.		1919.		1921		1923.		1924.		1925.	
	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.	No.	Gross Tonnage.
Gt. Britain and Ireland	513	1,956,606	757	2,994,249	515	2,640,319	360	1,395,181	286	1,296,971	217	885,013
British Dominions †	27	19,463	100	218,440	34	66,469	19	33,355	18	21,304	16	20,884
United States †	62	133,187	589	2,818,855	42	216,278	25	42,285	25	41,974	40	89,211
Austria-Hungary	16	63,300	—	—	—	—	—	—	—	—	—	—
Denmark	12	25,362	56	100,335	27	63,070	28	62,196	28	84,828	17	60,693
France	39	229,020	65	216,775	76	352,635	24	110,725	39	197,170	39	167,256
Germany	102	544,682	No returns.		No returns.		92	324,184	91	355,250	53	234,145
Holland	41	126,867	126	328,338	123	313,879	45	112,811	41	124,766	36	108,894
Italy	23	53,809	125	314,547	122	393,832	38	119,663	33	154,790	41	309,578
Japan	14	47,797	64	309,474	35	144,912	20	63,207	12	38,990	13	52,210
Norway	49	42,614	61	92,719	40	61,559	29	33,735	35	32,876	20	12,980
Russia	1	5,620	—	—	—	—	—	—	—	—	—	—
Spain	3	6,855	28	107,463	16	69,937	10	23,065	1	7,500	8	36,125
Sweden	18	18,400	67	110,765	33	78,269	19	43,159	21	57,930	18	55,180
Other Countries	19	23,829	29	68,703	62	55,784	40	31,470	23	31,987	18	12,376
World's Total	939	3,297,411	2067	7,680,663	1125	4,456,943	749	2,395,026	653	2,446,336	536	2,044,545

* The figures give the number and aggregate gross tonnage of steamers, motorships, and sailing vessels under construction on December 31st of each year.

† Excluding vessels building at ports on the Great Lakes of America.

ANNUAL MERCHANT SHIPPING LOSSES OF THE WORLD.*

	1913.			1919.			1922.			1923.			1924.			1925.		
	No.	Tonnage.	% of Tonnage owned.	No.	Tonnage.	% of Tonnage owned.	No.	Tonnage.	% of Tonnage owned.	No.	Tonnage.	% of Tonnage owned.	No.	Tonnage.	% of Tonnage owned.	No.	Tonnage.	% of Tonnage owned.
Gt. Brit. & Ireland	113	199,453	1·07	99	151,653	·92	83	122,088	·63	88	140,335	·73	74	111,207	·58	58	62,468	·32
British Dominions	37	20,091	1·16	89	52,539	2·56	43	20,602	·75	53	31,181	1·12	61	41,325	1·49	39	19,719	·71
United States ‡ .	91	71,469	2·38	115	150,272	1·15	72	94,387	·64	62	99,905	·68	64	87,418	·65	46	58,442	·45
Austria-Hungary .	3	5,536	·55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Denmark . . .	13	6,583	·86	15	5,295	·75	9	8,281	·80	10	8,071	·81	13	14,198	1·37	9	2,879	·27
France	30	34,506	1·57	34	40,420	1·81	38	33,204	·86	38	18,011	·48	25	27,726	·79	27	18,440	·53
Germany . . .	31	56,379	1·11	50	24,167	—	33	27,408	1·45	36	43,266	1·66	26	23,095	·78	30	25,082	·82
Holland . . .	4	1,340	·10	23	11,550	·73	7	5,167	·20	5	10,817	·41	1	801	·03	5	14,431	·55
Italy	26	26,881	1·77	8	3,096	·23	27	33,908	1·18	32	55,702	1·82	16	38,810	1·37	27	41,375	1·37
Japan	25	25,514	†	38	41,418	†	64†	54,136†	1·51†	33†	58,548†	1·62†	42†	70,933†	1·85 †	38†	42,788†	1·09†
Norway . . .	61	60,648	2·47	41	44,132	2·37	29	27,068	1·04	30	40,109	1·57	22	23,786	·95	23	24,115	·90
Russia	29	23,894	2·45	4	4,771	·88	—	—	—	—	—	—	—	—	—	—	—	—
Spain	13	15,928	1·89	16	9,752	1·30	25	29,741	2·30	13	11,862	·94	10	10,181	·82	16	18,133	1·53
Sweden	30	17,327	1·65	38	29,021	2·92	12	7,304	·65	27	14,645	1·21	16	16,627	1·33	21	15,838	1·22
Other Countries .	36	42,686	—	65	54,719	—	63	[illegible]3,417	—	39	44,120	—	52	65,438	—	49	53,755	—
World's Total .	542	608,235	—	635	622,805	—	505	516,711	—	466	576,572	—	422	531,545	—	388	395,475	—

* Figures refer to steam, motor, and sailing vessels of 100 gross tons and over totally lost, condemned, etc. The tonnage given is gross for steamers and motorships, and net for sailing ships up to and including the returns for 1919; in subsequent returns the tonnage is gross for steamers, motorships, and sailing ships.

† Japanese sailing vessels not included.

‡ Excluding ships trading on the Great Lakes of America.

FREIGHT RATES.

Estimated Average Rates of Freight for Steamers in the Open Market, for various Years.

Outward. From Tyne and N.E. Coast ports.

To	1920. s. d.	1921. s. d.	1922. s. d.	1923. s. d.	1924. s. d.	1925. s. d.
River Plate	—	19 10	14 10	14 7½	13 0	16 2½
Port Said	41 3	15 4	14 2¾	11 3	10 11¼	10 4
Alexandria	—	16 11	15 2	11 10	11 5	10 0
Barcelona	34 0	16 8	14 8¼	12 11	12 5½	12 0
Algiers	51 5	13 2	10 11	9 10	9 4½	8 9
Oporto	46 6	16 6	15 0	14 6	13 0	10 9
Canary Islands	—	12 10	11 0	—	9 1½	8 10½
Bordeaux	38 10	8 11	7 6	6 8½	5 10	5 2½
Bilbao	—	12 10	11 6	8 4½	7 11½	7 9
Stockholm	—	10 7	7 10½	7 1	5 11¼	5 6½
Rotterdam	17 3½	8 7	5 6½	5 4	4 3¾	3 10
Hamburg	10 3	6 10½	5 8½	5 7	4 5½	3 10½

Homeward. To U.K. or Continent, except where otherwise stated.

From	1920. s. d.	1921. s. d.	1922. s. d.	1923. s. d.	1924. s. d.	1925. s. d.
River Plate (Lower Ports)	118 6	35 8	26 6	20 0	23 9¼	15 5
River Plate (San Lorenzo)	125 0	45 1	27 7	23 4½	25 9¾	17 9
New Orleans or Galveston *	—	7 2	3 2½	3 4	4 2½	3 3½
Calcutta	106 10	25 0	22 1½	27 7¾	30 1	28 11
Karachi	84 6	28 4	24 10	25 7	23 8½	22 9¼
Rice Ports	112 0	34 2	27 10	29 8¼	32 8¾	29 7¾
Bombay (d.w.)	86 0	24 10	22 3	26 2¾	26 1¾	23 8
Odessa, etc. (direct)	—	—	14 4	14 2½	14 10	13 0¼
Danube	60 2	25 10	16 8	18 7	19 10¾	16 8¾
Sulina (direct)	56 0	—	—	15 5	15 10½	16 10¼
Bilbao †	25 1¾	10 2	7 4½	8 0	6 8	6 3
Huelva	28 1	10 8	8 7	8 1	8 5½	6 5

* Net Charter. † To Tyne.

NUMBERS OF MERCHANT VESSELS OF VARIOUS SPEEDS.†

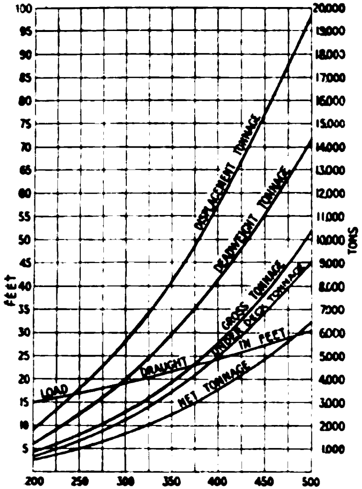
Speed.	Number. 1910.	1922.	1924.	1925.	1926.	Speed.	Number. 1910.	1922.	1924.	1925.	1926.
25 knots and over . .	—	8	4	3	3	16½ knots . .	45	44	53	43	51
24 „ and under 25	—	9	7	5	6	16 „ . .	126	131	132	147	162
23 „ „ 24	—	5	8	10	9	15½ „ . .	47	35	45	55	52
22 „ „ 23	—	17	16	13	15	15 „ . .	215	185	201	182	205
21 „ „ 22	—	20	9	11	14	14½ „ . .	85	81	102	100	100
20 „ „ 21	105*	32	39	42	42	14 „ . .	276	289	319	322	327
19 „ „ 20	42	26	19	25	28	13½ „ . .	138	170	172	169	169
18½ knots	24	18	16	23	20	13 „ . .	462	458	461	441	451
18 „	60	54	55	54	50	12½ „ . .	206	153	195	186	211
17½ „	48	36	34	30	22	12 „ . .	732	790	853	839	918
17 „	83	88	120	121	120						

* This figure includes all merchant steamers of 20 knots and over in existence in 1910.
† The speeds used in compiling these tables are as given by the owners.

FASTEST VESSELS OF THE WORLD.†

Speed (knots).	Name.	Gross Tonnage.	Date built.	Flag.	Owners.	L.* (ft.).	B.* (ft.).	D.* (ft.).
25 and under 26	Majestic	56,551	1921	British	White Star	915·5	100·1	58·2
	Mauretania . . .	30,696	1907	„	Cunard	762·2	88·0	57·1
	Versailles	1,903	1919	French	Chemins de Fer de l'État Français and the Southern Rly.	300·6	34·6	21·4
24 and under 25	Anglia	3,460	1920	British	London, Midland & Scottish Rly.	380·5	45·2	17·2
	Cambria	3,445	1921	„	„	380·6	45·2	17·2
	Hibernia	3,458	1920	„	„	380·6	45·2	17·2
	Scotia	3,441	1921	„	„	380·5	45·2	26·2
	France	23,769	1912	French	Cie. Gén. Transatlantique	690·1	75·6	48·5
23 and under 24	Leviathan	59,957	1914	„	U.S. Shipping Board	907·6	100·3	58·2
	Aquitania	45,647	1914	British	Cunard	868·7	97·0	49·7
	Berengaria . . .	52,226	1912	„	„	883·6	98·3	57·1
	Biarritz	2,053	1915	„	Southern Rly.	341·2	42·1	24·0
	Engadine	1,676	1911	„	„	316·0	41·1	15·8
	Maid of Orleans . .	2,071	1918	„	„	341·1	42·1	16·0
	Paris	1,774	1913	„	„	293·5	35·6	15·2
	Riviera	1,675	1911	„	„	316·0	41·1	15·8
	Viking	1,957	1905	„	Isle of Man Stm.PacketCo.	350·4	42·0	16·1
	H. F. Alexander . .	8,357	1914	U.S.	Admiral Line	509·5	63·1	21·0
22 and under 23	Isle of Thanet . .	2,664	1925	British	Southern Rly.	329·5	45·1	17·1
	Maid of Kent . . .	2,664	1925	„	„	329·5	45·1	17·1
	Manxman	2,030	1904	„	Isle of Man Stm.PacketCo.	334·0	43·1	17·3
	Mona's Isle . . .	1,688	1905	„	„	311·2	40·1	15·8
	Olympic	46,439	1911	„	White Star	852·5	92·5	59·5
	St. Andrew . . .	2,495	1908	„	Fishguard and Rosslare Railways and Harbours Co.	351·1	41·1	16·5
	St. David	2,457	1906	„	„	350·8	41·1	16·5
	St. Patrick . . .	2,456	1906	„	„	350·8	41·1	16·5
	Snaefell	1,713	1906	„	Isle of Man Stm.PacketCo.	315·0	39·6	15·7
	Victoria	1,689	1907	„	Southern Rly.	311·0	40·1	15·8
	Wahine	4,436	1913	„	Union S.S. Co. of New Zealand, Ltd.	375·0	52·2	25·6
	Paris	34,569	1921	French	Cie. Gén. Transatlantique	735·4	85·3	59·1
	Mecklenburg . . .	2,907	1922	Dutch	Stoomv. Maats. "Zeeland"	350·4	42·7	23·9
	Oranje Nassau . .	2,885	1909	„	„	350·0	42·7	16·4
	Prinses Juliana . .	2,908	1920	„	„	350·4	42·7	23·9

* Registered dimensions; see note on p. 430.
† The speeds used in compiling this table are as given by the owners.



Length of Ship in Feet.

AVERAGE RELATION BETWEEN TONNAGE AND LENGTH.*

For modern steamers of the Full-Scantling Three-Island Type with 50 per cent. erections, proportions vary from $L/D = 12{\cdot}5$ and $B/D = 1{\cdot}8$ in the 200 ft. ship to $L/D = 13{\cdot}0$ and $B/D = 1{\cdot}65$ in the 500 ft. ship.

* Reprinted by permission from a paper on "Tonnage Legislation and its Application to the Measurement of Ships," by E. W. Blockridge, M.I.N.A.

GENERAL PARTICULARS OF LARGE SHIPS OF VARIOUS NATIONALITIES.

Name of Ship	AQUITANIA.	MAURETANIA.	LEVIATHAN (ex Vaterland).	BERENGARIA (ex Imperator).	MAJESTIC (ex Bismarck).
Builders	J. Brown & Co., Ltd., Clydebank	Swan, Hunter & W. Richardson, Ltd., Wallsend-on-Tyne	Blohm & Voss, Hamburg	Vulcan Co., Hamburg	Blohm & Voss, Hamburg.
Owners or Managers	Cunard Co.	Cunard Co.	U.S. Shipg. Board	Cunard Co.	White Star Line
Year when built	1914	1907	1914	1912	1921
Length over all	901 ft. 6 ins.	790 ft.	950 ft.	905 ft.	956 ft.
Length between perps. (or moulded)	865 ft. 8 ins.	760 ft.	—	880 ft.	912 ft.
Breadth	97 ft.	88 ft.	100 ft. 3⅜ ins.	98 ft. 3½ ins.	100 ft.
Depth (moulded)	54 ft. 6 ins.	60 ft. 9 ins.	63 ft.	62 ft.	64 ft.
Gross Tonnage	45,647	30,696	59,957	52,226	56,551
Draught	36 ft. 2 ins.	36 ft. 3 ins.	38 ft. 6 ins.	35 ft. 6 ins.	38 ft. 11¼ ins.
Displacement (tons)	51,700	41,590	63,100	57,000	64,000
Number of Passengers—					
First Class	597	602	672 †	700	1000
Second Class	614	430	535	600	545
Third Class	2000 (and 52 servs.)	780	2392 ‡	2690	2392
Machinery Makers	John Brown & Co., Ltd.	Wallsend Slipway and Engineering Co., Ltd.	Blohm & Voss, Hamburg	Vulcan Co., Hamburg	Blohm & Voss, Hamburg
Type of Engines	Stm. Turbs. driving 4 Screws	Stm. Turbs. driving 4 Screws	Turbines	Stm. Turbs. driving 4 Screws	Stm. Turbs. driving 4 Screws
Number of Cranks	—	—	—	—	—
Diam. of Cylinders	—	—	—	—	—
Stroke of Pistons	—	—	—	—	—
Revs. per Minute	180	200	180–190	185	180
Total Indicated or Shaft H.P.	60,000	75,000	—	76,250	66,000
No. and Type of Boilers	21 Cylindrical (double ended)	25 Cylindrical (23 double-ended, 2 single-ended)	46 Water Tube	46 Water Tube	48 Water Tube
No. of Furnaces	168 (oil-fired)	192 (oil-fired)	138 (now fitted for oil burning)	46 (oil-fired)	48 (oil-fired)
Steam Pressure (lb. per sq. in.)	195	195	235	228	260
Total Heating Surface (sq. ft.)	138,595	159,000	210,440	203,009	220,000
Total Grate Area (sq. ft.)	3541	4060	3843	3763	4013
System of Draught	Howden's	Howden's	Howden's	Howden's	Forced
Speed on Service (knots)	23	25·5 *	23	23	25

* NOTE.—This figure is the mean speed attained for 27 consecutive runs across the North Atlantic in one year covering a total distance of 77,500 nautical miles. The highest mean speed from Queenstown to New York was 26·25 knots; see page 517.

† 80 Berths for Servants and 110 Pullman Berths in addition. ‡ Including 1542 Fourth Class Passengers.

PARTICULARS OF FASTEST VOYAGES ON PRINCIPAL PASSENGER SERVICES.

Name of Vessel.	Owners.	Date of Voyage.	Ports between which Voyage was made.	Total distance (Sea miles).	Time taken.	Average speed (Knots).	Best day's run (Knots).
Mauretania . .	Cunard Steam Ship Co., Ltd.	Sept., 1910	Liverpool and New York	2,780*	4 days, 10 hours, 41 mins.	26·06	—
,,	,, ,,	Aug., 1924	New York and Cherbourg	3,198§	5 days, 1 hour, 49 mins.	26·25	—
Majestic . . .	White Star Line	Sept., 1923	New York and Southampton via Cherbourg	3,104 (ocean passage)	5 days, 5 hours, 21 mins.	24·76	613
Empress of France	Canadian Pacific Steamships, Ltd.	July 17–24, 1924	Southampton and Quebec	2,640	5 days, 8 hours, 51 mins.	20·49	—
China	Peninsular and Oriental Steam Navigation Co.	Sept. 26 to Oct. 14, 1919	London and Bombay	6,258	17 days, 20 hours.†	15·7	—
Orcoma . . .	Pacific Steam Navigation Co.	Feb. 22 to May 7, 1923	Liverpool, Valparaiso, Liverpool, *via* Panama Canal	18,627	78 days, 8 hours (actual steaming 55 d. 8½ h.)	14·0	371
Paris	Southern Railway and French State Railway	July 14, 1913	Newhaven and Dieppe	65	2 hours, 35 mins., 37 secs.	25·07	—
Maid of Orleans .	Southern Railway	April 25 & 28, 1922	Dover and Calais	20	50 mins.	24·0	—
St. George . .	Gt. Western Railway ‡	July 6, 1910	Fishguard and Rosslare	54	2 hours, 28 mins.	21·9	—
Lorina	Southern Railway	Sept. 4, 1920	Jersey and Southampton	130	6 hours, 34 mins.	19·8	—

Remarks.

* The distance given is between Daunts Rock and Sandy Hook Lightship, the points between which the time was taken. On a voyage in January, 1911, the Mauretania attained a speed of 27·04 knots for one day, and the best day's run on the same voyage was 676 knots.

§ The distance given is between Ambrose Channel Light Vessel and Cherbourg Breakwater.

† Record sea transit to Bombay, but not record speed as vessel did not have to deviate to Marseilles.

‡ Now owned by the London and North Eastern Railway.

PRICES OF BRITISH BUNKER COALS, 1914 TO 1925.

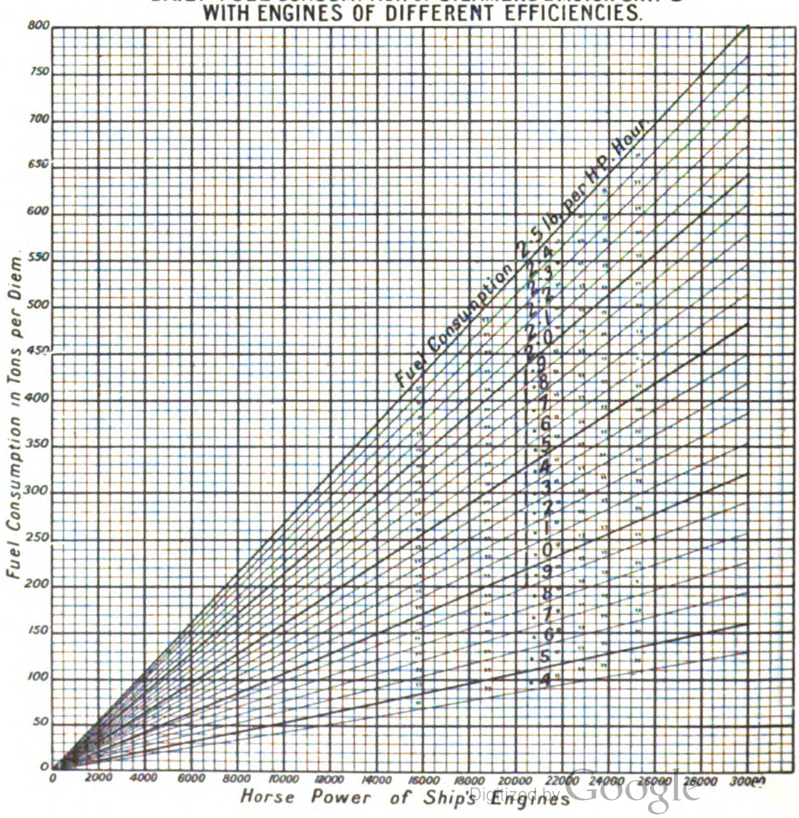
Class of Coal.	Average prices 1914.		Highest and Lowest Prices (f o.b. ex. tips.)																					
			1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Durham Bunkers—	12	8½	30	0	42	6	26	6	75	0	100	0	120	0	60	0	25	0	37	6	30	0	25	0
(Tyne special) .			12	6	22	6	20	0	25	0	32	0	33	6	26	0	19	6	23	0	18	0	14	0
Durham Bunkers—	12	0½	25	0	39	0	24	0	65	0	90	0	115	0	52	0	23	0	33	0	28	0	22	0
(Tyne ordinary) .			10	3	18	0	16	0	24	0	31	0	32	0	24	0	19	0	20	0	17	0	13	0
Cardiff Bunkers—	9	6	23	6	34	0	21	6	28	6	85	0	97	6	55	0	23	0	33	0	23	0	16	0
Small (class 1) .			10	0	14	6	13	0	21	6	28	6	35	0	18	6	16	0	17	0	14	6	9	6
Cardiff Bunkers—	13	0	24	0	40	0	25	0	35	6	80	0	110	0	50	0	24	0	35	0	24	0	21	0
No. 2 through .			12	0	15	6	16	6	23	6	35	6	50	0	20	0	18	0	18	0	18	0	16	6
South Derbyshire—	—		26	3	42	6	35	0	70	0	70	0	80	0	53	0	28	0	33	6	32	6	27	0
Steam hard . .			14	9	20	6	24	0	30	0	37	0	37	0	26	0	23	6	24	0	21	0	18	9
Yorkshire nuts—	12	7½	21	0	28	0	27	6	60	0	60	0	80	0	50	0	30	0	33	0	30	0	22	6
Doubles . . .			14	6	21	0	24	0	25	0	32	0	32	0	27	0	22	0	25	0	21	6	15	6
Scotch Navigation—	16	1½	26	0	40	0	32	6	70	0	95	0	97	6	75	0	28	6	32	0	30	0	22	9
f.o.b. Glasgow .			13	9	24	0	26	0	30	0	37	0	72	6	26	0	25	0	24	6	20	3	16	9
Scotch Navigation—	13	3	30	0	50	0	33	6	70	0	110	0	142	0	60	0	30	0	35	0	32	0	24	0
f.o.b. Fife Ports .			16	6	23	0	27	0	31	0	38	0	73	0	28	0	26	0	27	6	24	0	20	6
Best Lancashire—	—		—		26	0	27	6	65	0	47	6	50	0	47	6	26	6	28	0	31	6	23	6
Steam					21	6	23	0	27	6	34	6	37	6	24	0	20	0	20	0	17	6	15	0

HIGHEST AND LOWEST FUEL OIL PRICES, 1914-1924.

(Price per ton in bulk ex wharf in U.K Ports.)

	1914.			1916.			1918.			1920.			1922.			1924.			1925.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Heavy . .	3	2	0	8	0	0	8	10	0	13	0	0	3	15	0	4	2	6	3	17	6
	2	5	0	7	0	0				9	17	6	3	0	0	3	17	6	3	12	6
Light . . .	3	10	0	9	0	0	9	10	0	15	0	0	5	5	0	5	2	6	4	17	6
	2	15	0	7	5	0				11	5	0	4	0	0	4	17	6	4	7	6

DAILY FUEL CONSUMPTION OF STEAMERS & MOTOR SHIPS WITH ENGINES OF DIFFERENT EFFICIENCIES.



"LAID-UP" STEAM TONNAGE OF PRINCIPAL MARITIME COUNTRIES.

	Jan. 1st, 1922.	Jan. 1st, 1923.	Jan. 1st, 1924.	July 1st, 1924.	Jan. 1st, 1925.	July 1st, 1925.	Jan. 1st, 1926.	July 1st, 1926.
	Gross tnage.	Grosstnge.	Gross tnage.	Gross tnge.	Gross tnage	Gross tnage	Gross tnage.	Gross tnge.
Gt. Brit. & Ireland	1,769,000	1,010,000	909,000	700,000	705,000	1,130,000	613,000	1,273,000
Australia . . .	50,249	106,000	85,000*	87,000	166,000	175,000*	51,000	125,000
United States :—								
Shipping Board .	4,314,000	4,411,000	3,564,000	3,812,000	3,664,000	3,767,000	3,518,000	3,225,000
Ship. Bd. Tankers	214,000*	214,000	163,000	141,000	125,000	107,000	134,000	91,000
Govt. owned, other than U.S. S. Bd.	†	†	3,000	‡	17,000	13,000	16,000	26,000
Privately owned .	781,000	703,000	541,000	312,000	417,000	366,000	458,000	415,000
U.S. total .	5,309,000	5,328,000	4,271,000	4,265,000	4,223,000	4,253,000	4,120,000	3,757,000
Belgium . . .	275,000*	170,000	86,000	35,000	26,000	68,000	21,000	28,000
Denmark . . .	161,000	17,000	13,000	—	—	18,000	63,000	75,000
France	1,085,000	730,000	450,000	317,000	311,000	219,000	134,000	92,000
Greece	170,000	76,000	122,000	91,000	24,000	99,000	99,000	67,000
Holland . . .	327,000	330,000	235,000	129,000	65,000	180,000	109,000	64,000
Italy	585,000*	472,000	427,000	252,000	225,000*	262,000	225,000	251,000
Japan	120,000	99,000	29,000	29,000	25,000	36,000	35,000	25,000
Norway	207,000	53,000	50,000	23,000	25,000	51,000	22,000	89,000
Spain	530,000*	520,000	128,000	98,000	60,000	73,000	44,000	73,000
Sweden	204,000	22,000	—	—	20,000	40,000	30,000	13,000
Other Countries § .	192,000	195,000	83,000	99,000	103,000	149,000	279,000	154,000
World's total .	10,984,249	9,128,000	6,888,000	6,125,000	5,978,000	6,753,000	5,845,000	6,086,000

* Estimated. † No data available. ‡ Included in U.S. Shipping Board Figure.
§ Mainly belonging to countries shown above.
(NOTE.—A reference is given, in the 1926 edition of the Annual, to the available information regarding the laying-up of tonnage prior to January, 1922.)

PAY IN THE MERCHANT SERVICE.—MONTHLY RATES.

*Foreign-going Cargo Steamers.**

Rating.	1914.	1924 †	1926. ‡
	£ s. £ s.	£ s. £ s.	£ s. £ s.
First Mates . .	12 5 to 14 5	17 10 to 26 10	16 0 to 25 0
Second Mates .	9 5 „ 12 15	15 0 „ 18 10	13 10 „ 17 0
Third Mates . .	7 10 „ 10 10	13 0 „ 14 0	11 10 „ 12 10
Chief Engineers	16 15 „ 24 0	21 10 „ 34 10	20 0 „ 33 0
Second Engineers	12 5 „ 14 15	17 10 „ 26 10	16 0 „ 25 0
Third Engineers.	8 15 „ 11 15	15 0 „ 18 10	13 10 „ 17 0
Carpenters . .	7 0 „ 7 10	12 10 „ 14 10	11 10 „ 13 10
Boatswains . .	6 5 „ 6 10	11 10 (Fixed rate.)	10 10 (Fixed rate.)
Firemen . . .	5 10 „ 6 0	10 10 „	9 10 „
Able Seamen .	5 0 „ 5 10	10 0 „	9 0 „

* On Oil-Tank Vessels, the 1924 and 1925 rates are supplemented by the following percentage additions :—

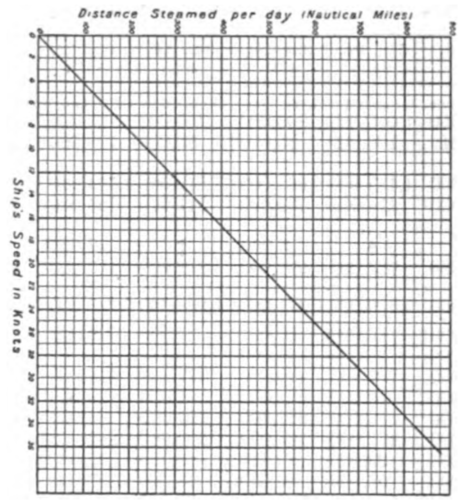
Chief Engineers . . . . 12½ per cent.
First Mates and Second Engineers . . . . . 10 „
Other Mates and Engineers . . . . 7½ „

On Motor Vessels there is a special National Standard Scale of Pay for Engineer Officers substantially higher than on steam-driven vessels.

† The 1924 figures are the National Maritime Board standard rates of pay, effective from September 5, 1924, and based, in the case of Navigating and Engineer Officers, on tonnage and seniority.

‡ National Maritime Board standard rates effective from August 1st, 1925.

On Passenger Liners, Navigating and Engineer Officers, as a rule, receive now, as before the War, wages from 10 to 25 per cent. higher than the Standard Cargo-Vessel rates.



DISTANCE STEAMED IN ONE DAY
BY SHIPS OF DIFFERENT SPEEDS.

NUMBERS OF MERCHANT VESSELS USING THE VARIOUS TYPES OF PROPULSION.†

(Excluding vessels of less than 100 tons gross). As at June, 1926.

Country.	Motor Engines.	Steam Turbine Engines.	Steam Reciprocating Engines.	Steam Auxiliary Engines.	Motor Auxiliary Engines.	Sails.	Totals.
Great Britain and Ireland	251	311	7,323	4	75	405	8,369
British Dominions	87	18	1,778	4	72	518	2,477
British Empire	338	329	9,101	8	147	923	10,846
United States (Sea)	149	683	2,326	—	55	885	4,098
Belgium	3	11	205	—	3	3	225
Denmark	61	25	518	2	55	110	771
France	29	62	1,376	2	29	271	1,769
Germany	106	48	1,646	1	127	58	1,986
Greece	4	—	446	—	7	10	467
Holland	75	58	851	—	77	48	1,109
Italy	52	60	920	4	63	302	1,401
Japan	58	37	1,768	88	136	—	2,087
Norway	187	21	1,498	18	78	42	1,844
Spain	19	11	714	3	55	122	924
Sweden	117	10	999	—	79	175	1,380
Other Countries	97	10	2,386	6	130	550	3,179
Total	1,295	1,365	24,754	132	1,041	3,499	32,086

† Excluding American Great Lake vessels, and Japanese sailing vessels.

COMPARISONS OF STEAM AND OIL-ENGINED VESSELS.

The table given herewith of comparisons of the cost of operating steam and oil-engined vessels is the same as was given in last year's issue of "Brassey's Annual," page 550.

The savings consequent upon the installation of Diesel machinery compel attention. The relative positions occupied by vessels propelled by the various types of prime movers will be noted.

It is impossible in any such comparisons to take fully into account all the factors which may operate in the case of vessels trading on different routes, but it is hoped that the figures given herewith will indicate the nature of the relative costs.

The following savings, which are effected by the installation of Diesel machinery, have not been taken into account: less fuelling costs, demurrage, no stand-by losses, less cleaning ship, higher average speed in a seaway, reduced fuelling appliances required, etc.

	DIESEL ENGINES.	RECIPROCATING STEAM-ENGINES.		TURBINES.
Type of propelling machinery.	4-cycle single-acting reversible, crosshead. Diesel electric-driven auxiliaries.	Triple-expansion engines, cylindrical boilers, Howden's forced draught, Superheat, 50° Fahr.		With reduction gearing, oil fired, Superheat, 150° Fahr.
		Coal-Fired Boilers.	*Oil-Fired Boilers.*	
Total deadweight in tons	10,050	10,230	10,235	10,235
Freight-earning cargo in tons	9,357	7,880	8,555	8,743
Average sea-power, horse-power	2,500 (Shaft)	2,800 (Indicated)	2,800 (Indicated)	2,500 (Shaft)
Radius of action in miles	10,500	10,500	10,500	10,500
Fuel consumption per brake horse-power hour, including auxiliaries, in lb.	0·45	2·0	1·4	1·1
* Fuel consumption per day in tons	12·1	53·5	37·5	29·5
Fuel consumption per voyage of 16 days, in tons	194	856	600	472
COMPARATIVE COSTS OF WORKING.				
Provisions, total per month	£151	£184 15*s.* 0*d.*	£156 10*s.* 0*d.*	£156 10*s.* 0*d.*
Wages, total per month	£404	£468	£408	£408
Fuel, per 16 days' sailing	£776 (£4 0*s.* 0*d.* per ton)	£1,070 (£1 5*s.* 0*d.* per ton)	£1,800 (£3 0*s.* 0*d.* per ton)	£1,416 (£3 0*s.* 0*d.* per ton)
Fuel, per month of 24 days' sailing	£1,164	£1,605	£2,700	£2,124
Cost of running for one year of 288 days' sailing	£20,628	£27,096	£39,168	£32,265
Tons of freight-earning cargo carried, assuming 9 round voyages per year, each of 32 days' total sailing out and home	168,426	141,840	153,990	157,274
Cost per ton of cargo carried per 16 days' sailing out and home	2*s.* 5*d.*	3*s.* 10*d.*	5*s.* 1*d.*	4*s.* 1*d.*
Cost per ton-mile	·0076*d.*	·0114*d.*	·0152*d.*	·0121*d.*

* Calorific value of oil fuel taken at 19,000 B.Th.U.'s. Calorific value of coal taken at 13,500 B.Th.U.'s.

NOTE.—No cognizance has been taken in the above table of the fact that with Diesel ships, bunker fuel oil, costing £3 per ton, can be used.

IMPORTANT MOTOR SHIPS IN SERVICE AND BUILDING, GIVING PARTICULARS OF THEIR MACHINERY.

Date.	Name of vessel.	Makers of machinery.	Type of engine.	Cycle.	No. of eng.	Total B.H.P.	I.H.P. per engine.	B.H.P. per engine.	No. of cyl. per eng.	B.H.P. per cyl.	Diameter of cyl. in ins.	Stroke in ins.	Ratio stroke to bore.	Revs. per min.	Piston speed. Ft. per min.	M.P. on B.H.P. basis.	M.P. on I.H.P. Basis.	Consumption of fuel in lbs. per sq. in. piston area.
1912*	Juno	Werkspoor	Werkspoor	4 single act.	1	1,100	1,460	1,100	6	183	22	39⅜	1·79	125	820	84·0	111·0	0·219
1918*	Aba (ex-Glenapp)	Harland & Wolff	Burmeister and Wain	4 single act.	2	5,250	3,200	2,625	8	328	29½	43 5/16	1·46	115	830	76·0	93·0	0·202
1920*	Ansaldo SanGiorgio Terzo	Ansaldo San Giorgio	Ansaldo	2 single act.	2	2,400	1,600	1,200	4	300	24⅘	35⅖	1·43	110	650	63·0	84·0	0·272
1920*	Sardinia	Werkspoor	Werkspoor	4 single act.	1	1,600	2,140	1,600	6	267	26⅜	47¼	1·79	110	865	74·5	100·0	0·205
1921*	Domala	N.B. Diesel Eng. Works, Ltd.	N.B. Diesel	4 single act.	2	4,000	2,500	2,000	8	250	26⅜	47	1·77	96	752	79·5†	99·5	0·191
1922*	Arnus	Swan Hunter & Wigham Richardson	Neptune-Polar	2 single act.	2	2,100	1,400	1,050	6	175	17	35	2·06	125	730	70·0	93·0	0·33
1922*	Scottish Musician	Vickers, Ltd.	Vickers	4 single act.	2	2,500	1,620	1,250	6	208	24½	39	1·59	118	767	76·0	99·0	0·185‡
1922*	Pacific Commerce *ex* Dominion Miller	Doxford	Doxford	2 opposed p.	1	2,700	3,000	2,700	4	675	22 13/16	91¼ comb'd.	2·0	77	585	93·0	103·0	0·362‡
1922*	Loch Katrine	Harland & Wolff	Burmeister and Wain	4 single act.	2	5,250	3,200	2,625	8	328	29⅛	45¼	1·55	115	865	75·0	91·5	0·206
1923*	Dalgoma	Stephen & Sons	Sulzer	2 single act.	2	3,200	2,200	1,600	4	400	26¾	43 5/16	1·62	85	613	76·5	105·0	0·312
1923*	Pizarro	Beardmore & Co.	Beardmore-Tosi	4 single act.	1	1,250	1,670	1,250	6	20	24 7/16	38⅜	1·57	115	735	76·0	100·0	0·185
1923*	Camranh	Sulzer	Sulzer	2 single act.	2	3,400	2,400	1,700	4	425	27	47	1·62	85	612	81·0	115·0	0·333
1924*	Dolius	Scott Ship.& Eng. Co.	Still	2 double act.	2	2,500	1,500	1,250	4	312	22	36	1·64	120	720	70 oil 6 steam	84 oil 7·2 st'm	0·28‖
1924*	Aorangi	Fairfield S. & E. Co.	Sulzer	2 single act.	4	13,000	4,400	3,250	6	542	27½	39	1·42	135	880	68·5	93·0	0·382 ¶
1924*	British Aviator	Palmers S. B. & I. Co.	Camellaird-Fullagar	2 opposed p.	1	3,000	4,000	3,000	6	500	23	72	1·56	86	516	77·0	102·0	0·258
1924*	Swanley	N.B. Diesel Co.	N.B. Diesel	2 double act.	1	2,000	2,750	2,000	3	667	24½	44	1·8	100	735	64·0	88·0	0·296
1925	Gripsholm	Burmeister & Wain	Burmeister and Wain	4 double act.	2	13,500	8,800	6,750	6	1,125	33	59	1·75	125	1,250	77·0	99·5	0·3
1925*	Asturias	Harland & Wolff	Burmeister and Wain	4 double act.	2	16,500	10,000	8,250	8	1,031	33	59	1·79	125	1,229	69	83	0·3
1926	Alcantara	Harland & Wolff	Burmeister and Wain	4 double act.	2	16,500	10,000	8,250	8	1,031	33	59	1·79	125	1,229	69	83	—
1926	Carnarvon Castle	Harland & Wolff	Burmeister and Wain	4 double act.	2	13,000	8,675	6,500	8	812	33	59	1·79	105	1,032	61	81	0·3
1926	Saturnia	Stabilimento Tecnico Triestino	Burmeister and Wain	4 db. act. with superchargers	2	20,000	13,350	10,000	8	1,250	33	59	1·79	125	1,229	83	111	—

* In operation at sea. † No compressor on engine. ‡ Solid injection. § Longstroke type. ‖ Oil and steam. ¶ Quadruple screw.

IMPORTANT DATES IN THE DEVELOPMENT OF MARINE PROPELLING MACHINERY.

—	Approximate Date of Introduction in the United Kingdom.			
	Merchant.		Naval.	
Compound engines	—	1860	—	1865
Triple-expansion engines	—	1880	—	1885
Quadruple-expansion engines	—	1890	Not fitted	—
Cylindrical boilers	—	1862	—	1869
Water-tube boilers	Cross-channel	1911	Destroyers	1893
	Ocean liners	1914	Battleships	1897
Direct turbines	Cross-channel	1901	Destroyers	1898
	Ocean liners	1905	Light cruisers	1904
			Battleships	1906
Combination engines and turbines	Intermediate liner	1908	(For cruising only)	1902
Geared turbines	Single-reduction	1911	Single-reduction	1913
	Double-reduction	1916	Not fitted	—
High pressure turbines	Single-reduction	1926	Destroyers	1926
Electric propulsion	First attempts	1904	Not fitted	—
	Modern plant	1912	—	—
Oil fuel burning	First attempts	1870	Coal and oil—	
			Destroyers	1902
			Battleships	1904
	Modern plant	1892	Oil alone—	
			Destroyers	1910
			Battleships	1913
Heavy oil engines	First attempts	1904	Tender	1914
	Modern plant	1910	Submarines	1908
	Double-acting	1924	—	—
	Supercharging	1925	—	—

MARINE ENGINES UNDER CONSTRUCTION IN THE WORLD *
(Recorded by Lloyd's Register of Shipping as at the end of December, 1925).

Country in which building.	Steam Engines.				Oil Engines.		Total.	
	Reciprocating.		Turbines.					
	No.	I.H.P.	No.	S.H.P.	No.	I.H.P.	No.	H.P.
Gt. Britain & Ireland	142	258,827	15	95,350	47	234,017	204	588,194
British Dominions	8	12,060	1	1,600	—	—	9	13,660
British Empire	150	270,887	16	96,950	47	234,017	213	601,854
United States	5	12,500	3	35,200	38	71,770	46	119,470
Denmark	3	4,300	—	—	25	84,700	28	89,000
France	18	51,700	2	59,600	6	35,200	26	146,500
Germany	28	37,340	6	44,200	37	128,410	71	209,950
Holland	28	36,765	1	3,000	17	50,720	46	90,485
Italy	5	8,200	3	45,000	21	107,560	29	160,760
Japan	6	10,300	—	—	2	8,000	8	18,300
Norway	14	10,470	—	—	1	2,800	15	13,270
Sweden	3	2,300	—	—	92	48,011	95	50,311
Switzerland	—	—	—	—	9	17,020	9	17,020
Other Countries	7	5,914	—	—	1	550	8	6,464
Total	267	450,676	31	283,950	296	788,758	594	1,523,384

* The horse-power is compiled from figures given by the makers; only engines intended for sea-going vessels are included.

PROGRESS IN MARINE MACHINERY.

Type of vessel.	Year.	Dimensions. Length (feet).	Dimensions. Beam (feet).	Performance. Speed (knots).	Performance. Horse-power.	Engines. No. of Propellers.	Engines. Type of Machinery.*	Engines. No. of Cylinders (per shaft).	Engines. Propeller revs. per min.	Engines. Piston speed (f.p.m.)	Engines. Referred M.P. (lb. per sq. in.)	Boilers. No. and Type.†	Boilers. Working press. (lb. per sq. in.)	Boilers. System of Draught.‡	Boilers. Heating Surface per H.P. (sq. ft.)	Boilers. H.P. per sq. ft. of grate.	Total weight of Machinery, "Steam Up" (tons).	H.P. per ton of Machinery.	Coal Consumption (lbs. per H.P. hour).
Atlantic liners	1881	500	50	18·0	10,680	1	C	3	64	770	29·1	– C	100	N	3·3	8·57	1,860	5·74	—
	1888	528	63	20·1	18,500	2	TE	3	86	860	35·3	9 DC	150	CS	2·75	14·3	2,516	7·4	1·7
	1893	600	65	22·0	30,000	2	TE	5	81	930	35	12 DC	165	N	2·73	11·4	4,935	6·1	1·6
	1899	685	68	20·7	27,000	2	TE	4	78	936	35	15 DC	192	AD	2·77	13·75	4,414	6·1	—
	1907	760	87	26·0	72,500	4	T	—	180	—	—	23 DC & 2 C	195	H	2·19	17·9	9,936	7·3	1·4
	1914	865	96	23·5	60,000	4	T	—	180	—	—	21 DC	195	H	2·31	16·9	9,302	6·5	1·3
	1921	912	100	23·5	66,000	4	T	—	180	—	—	48 W	260	FD	3·33	16·4	—	—	—
Intermediate Ocean liners	1880	400	45	12·5	3,000*	1	C	2	61	671	20·5	2 C	90	N	3·1	7·6	685	4·35	2·4
	1892	470	53	12·5	3,500*	2	TE	3	80	640	32·0	2 DC & 1 C	170	N	3·3	10·0	795	4·4	1·9
	1911	520	64	14·5	7,500*	2	QE	4	82	738	37·0	5 DC	210	N	3·25	11·75	1,750	4·25	1·6
	1914	550	66	16·5	11,000§	2	GT	—	133	1,650P	—	5 DC	210	H	2·5	17·5	1,800	6·1	1·4
	1920	550	66	17·0	11,000§	2	GT	—	85	{3,200 / 2,000}Q	—	5 Wz	250	OD	2·25	—	1,210	9·1	0·9a
Cargo steamers	1877	314	35	11·25	775*	1	FC	—	52	450	23	1 OC	70	N	4·46	7·6	200	3·87	2·5
	1885	320	38	12·25	1,650*	1	TE	—	70	560	31·5	2 C	150	N	2·82	10·4	340	4·85	1·95
	1911	440	52	13·25	4,200*	1	TE	—	73	750	35	2 C	190	FD	2·8	16·25	900	4·67	1·65
	1914	450	56	14·25	5,000§	1	GT	—	102	1,350P	—	2 C	195	H	2·30	20·0	930	6·45	1·45
	1920	503	63	14·25	7,000§	2	DT	—	80	{3,500 / 1,800}Q	—	3 FCz	200	OD	2·25	—	1,100	6·35	0·85a
Cross-Channel Steamers	1890	300	35	18·00	4,400*	2	TE	3	130	780	30·75	5 C	160	N	2·6	12·25	590	7·45	2·25
	1898	315	37	19·75	5,520*	2	TE	4	165	910	43·0	4 C	180	FD	1·95	17·5	610	9·62	2·1
	1904	330	42	19·5	5,500§	3	T	—	550	550P	—	2DC&1C	150	FD	1·9	16·5	590	9·3	1·8
	1910	316	41	21·5	8,500§	3	T	—	625	625P	—	7 W	190	FD	1·95	15·0	735	11·6	1·7
	1920	302	36	23·5	12,300§	2	GT	—	435	{2,600 / 1,800}Q	—	8 W	195	FD	2·00	22·0	1,055	11·65	1·5
	1925	329	45	22·25	—	2	GT	—	270	—	—	5 W	200	FD	—	—	—	—	—
Motor ships	1909	210	38	8·5	490*	1	4 S	6	140	550	99y	Steam auxiliaries		—	—	—	91	4·3t	0·6a
	1910	260	43	10·5	1,460*	1	4 S	6	125	820	111y	,,	,,	—	—	—	220	5·0t	0·5a
	1912	380	53	11·0	2,500*	2	4 S	8	140	670	89·8y	Electric	,,	—	—	—	390	4·8t	0·47a
	1914	425	55	11·25	3,100*	2	4 S	6	125	785	89·5y	,,	,,	—	—	—	475	4·9t	0·45a
	1916	450	57	12·0	4,000*	2	4 S	6	100	725	91·0y	,,	,,	—	—	—	600	5·0t	0·45a
	1922	502	62	13·5	6,400*	2	4 S	8	115	865	91·5y	,,	,,	—	—	—	940	5·1t	0·45a
	1924	580	72	18·5	17,500*	4	2 S	6	135	880	93·0y	Steam	,,	—	—	—	2,350	—	0·48a
	1926	630	79	17·0	20,000	2	4 D	8	125	1,229	83·0y	Electric	,,	—	—	—	5,000	5·0	0·43a

* C = Vertical Compound ; F.C. = Tandem Compound with flywheel ; TE = triple expansion ; QE = quadruple expansion ; T = turbines ; GT = geared turbines ; DT = double-reduction geared turbines ; 4S = 4-cycle single acting motors ; 4D = 4-cycle double-acting motors ; 2S = 2-cycle single acting motors.
† C = cylindrical ; OC = oval ends and cylindrical middle portion ; DC = double-ended cylindrical ; FC = oil-fired cylindrical ; W = water-tube (oil-fired).
‡ N = natural draught ; AD = assisted draught ; CS = closed stokehold ; FD = forced draught ; H = Howden's forced draught ; OD = oil-burning with forced draught.
* I.H.P. § S.H.P. t B.H.P. P turbine revs. per min. Q turbine revs. per min., H.P. and L.P. respectively.
z with superheaters. a Oil. y Mean Pressures for motorships are on I.H.P. basis.

PRODUCTION OF CRUDE OIL IN VARIOUS REGIONS.

Country.	Production of Crude Petroleum in—									
	1880.	1890.	1900.	1910.	1920.	1921.	1922.	1923.	1924.	1925.
	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
United States . . .	26,286,123	45,823,572	63,620,529	209,557,248	443,402,000	472,183,000	557,531,000	732,407,000	714,000,000	755,852,000
Mexico	—	—	—	3,634,080	163,540,000	193,397,587	182,278,000	149,585,000	139,587,000	113,000,000
Trinidad	—	—	—	142,857	2,083,027	2,354,000	2,445,000	3,051,000	4,284,000	4,800,000
Argentina	—	—	—	20,753	1,665,989	1,747,410	3,018,000	3,400,000	3,844,000	5,000,000
Peru	—	—	274,800	1,330,105	2,816,649	3,699,280	5,314,000	5,699,000	7,812,000	11,000,000
Venezuela	—	—	—	—	—	1,433,000	2,201,000	4,201,000	9,500,000	19,000,000
Dutch East Indies .	—	—	2,253,355	11,030,620	17,529,210	16,958,105	16,720,000	19,868,000	21,000,000	22,000,000
Egypt	—	—	—	—	1,042,000	1,255,000	1,189,000	1,054,000	1,107,000	1,200,000
India	—	118,065	1,078,264	6,137,990	7,500,000	8,000,000	8,529,000	8,320.000	8,150,000	8,000,000
Japan *	25,497	51,420	866,814	1,930,661	2,139,777	2,447,000	2,055,000	1,805,000	1,600,000	2,000,000
Persia	—	—	—	—	—	16,678,000	22,247,000	28,326,000	31,845,000	35,000,000
Sarawak	—	—	—	—	—	1,411,000	2,849,000	3,940,000	4,500,000	5,000,000
Poland	229,120	659,012	2,346,505	12,673,688	5,606,116	5,167,000	5,227,000	5,373,000	5,710,000	5,800,000
Roumania	114,321	383,227	1,628,535	9,723,806	7,435,344	8,368,000	9,843,000	10,867,000	13,296,000	15,000,000
Russia	3,001,200	28,691,218	75,779,417	70,336,574	25,429,600	29,150,000	35,692,000	39,156,000	45,162,000	55,000,000
Other Countries . .	761,345	906,324	1,283,897	1,419,247	14,654,288†	1,032,000	1,578,000	1,539,000	1,742,000	1,879,000
Total	30,017,606	76,632,838	149,132,116	327,937,629	694,854,000	765,065,000	858,715,000	1018,591,000	1013,139,000	1059,531,000
Percentages of increase	418 over 1870	155·4 over 1880	94·5 over 1890	119·8 over 1900	111·9 over 1910	10·1 over 1920	12·2 over 1921	18·5 over 1922	·5 % *decrease* over 1923	4·7 % over 1924

NOTE.—The figures in the above table may be taken as approximately accurate, allowing for the more or less exact methods of various tabulators, *e.g.* in the capacity of the "barrel." The standard usually taken is 42 U.S. gallons to the barrel. The later figures for Russia, and in one or two other instances where authoritative returns are not published, have had to be partly estimated.

* The figures for Japan include Formosa. † Includes Persia.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES.

(Thousands of Tons, *i.e.* 000's omitted.)

Country.	1890.	1900.	1910.	1920.	1921.	1922.	1923.	1924.	1925.
Great Britain and Ireland	180,639	225,181	264,433	229,295	164,344	250,808	278,141	269,134	246,671
British Dominions	9,027	18,808	42,183	58,661	58,286	55,969	60,626	58,224	48,651*
British Empire	189,656	243,989	306,631	288,193	221,537	305,576	336,636	325,696	295,322
United States	140,846	240,748	447,835	587,774	452,167	425,876	572,219	511,811	514,605
Austria-Hungary	9,770	12,175	14,891	4,399	6,024	6,354	7,583	7,088	6,226
Belgium	20,045	23,094	23,540	22,036	21,457	20,874	22,561	22,992	22,767
China	—	—	12,982	19,800*	19,800*	19,800*	19,800*	19,800*	10,000*
Czecho-Slovakia	—	—	—	11,201	11,837	10,300	12,153	14,133	12,554
France	25,672	32,879	37,746	34,126	37,928	42,473	46,984	44,244	47,275
Germany	69,132	107,569	150,421	129,313	134,082	129,675	61,245	116,958	130,632
Holland	107	315	1,272	5,252	3,979	4,528	5,251	5,977	6,740
Japan	2,598	7,371	15,434	28,784	25,808	27,266	28,492	29,635	28,758
Russia	5,920	15,902	24,537	7,522	8,397	8,915	12,044	13,592	17,361
Other Countries	2,789	4,049	7,034	8,254	11,708	21,985	39,755	35,244	35,209
World total	466,535	688,091	1,042,307	1,146,417	955,817	1,024,803	1,166,854	1,148,827	1,127,449

† Partly estimated. * Estimated.

COAL PRODUCTION AND DISTRIBUTION OF THE UNITED KINGDOM.

Year.	Total production. (Thousand tons.)	Home consumption. (Thousand tons.)	Exported * (Thousand tons.)	Bunkers. (Foreign trade.) (Thousand tons.)
1902	227,095	168,788	43,159	15,148
1903	230,334	168,584	44,950	16,800
1904	232,428	168,981	46,256	17,191
1905	236,129	171,256	47,477	17,396
1906	251,068	176,878	55,600	18,590
1907	267,831	185,602	63,610	18,619
1908	261,529	179,508	62,547	19,474
1909	263,774	180,983	63,077	19,714
1910	264,433	182,822	62,085	19,526
1911	271,892	188,029	64,599	19,264
1912	260,416	177,681	64,444	18,291
1913	287,412	192,980	73,400	21,032
1914	265,430	187,854	59,040	18,536
1915	253,179	196,013	43,535	13,631
1916	255,846	204,506	38,352	12,988
1917	248,041	202,817	34,996	10,228
1918	226,557	186,048	31,753	8,756
1919	229,037	181,766	35,250	12,021
1920	229,295	190,523	24,932	13,840
1921	164,344	128,757	24,661	10,926
1922	250,808	168,350	64,198	18,259
1923	278,141	180,533	79,450	18,158
1924	269,134	189,793	61,651	17,689
1925	246,671	179,417	50,817	16,437

* Excluding coke and manufactured fuel.

COAL PRODUCTION AND DISTRIBUTION OF THE UNITED STATES.

Year.	Total production.* (Thousand tons.)	Home consumption. (Thousand tons.)	Exported. (Thousand tons.)	Bunkers. (Foreign trade.) (Thousand tons.)
1902	269,277	Figures not available	6,127	Figures not available
1903	319,068	,,	8,312	,,
1904	314,122	,,	8,573	,,
1905	350,645	,,	9,189	,,
1906	369,783	354,736	9,922	5,125
1907	428,896	409,989	13,153	5,754
1908	371,288	353,411	11,853	6,024
1909	411,442	392,786	12,537	6,119
1910	447,854	427,602	13,806	6,446
1911	443,189	419,089	17,433	6,667
1912	477,202	451,713	18,149	7,340
1913	508,893	479,051	22,141	7,701
1914	458,505	433,607	17,632	7,266
1915	474,660	446,884	20,305	7,471
1916	526,873	495,904	23,143	7,826
1917	581,609	548,077	26,649	6,883
1918	605,546	575,622	24,392	5,532
1919	494,600	464,808	22,402	7,343
1920	577,738	529,161	39,415	9,362
1921	452,139	419,762	24,829	7,548
1922	425,849	408,280	13,449	4,120
1923	572,182	543,935	23,700	4,547
1924	512,048	489,208	18,851	3,989
1925	514,605	491,832	18,429	4,344

* Figures given include both anthracite and bituminous coal.

"EXPORTS" OF NEW SHIPS FROM THE UNITED KINGDOM.

Ships not Registered as British, with their Machinery.

Year.	War Vessels (including Machinery and Armament).	Steam Ships (other than War Vessels). Hulls and Fittings.	Steam Ships (other than War Vessels). Machinery.	Sailing Ships (other than War Vessels) including Boats.	Total of New Ships.
	£	£	£	£	£
1903	74,480	2,798,737	1,222,108	188,504	4,283,829
1904	388,600	2,570,835	1,164,779	330,937	4,455,151
1905	50,000	3,693,422	1,516,183	171,693	5,431,298
1906	2,800,000	3,973,873	1,668,592	201,706	8,644,171
1907	554,700	6,586,449	2,550,702	326,262	10,018,113
1908	1,879,994	5,902,428	2,505,280	189,773	10,567,475
1909	247,000	3,698,556	1,819,618	161,940	5,927,114
1910	4,894,500	2,553,427	1,209,119	113,158	8,770,204
1911	25,000	3,745,349	1,632,402	259,564	5,663,115
1912	765,000	4,243,308	1,750,351	268,503	7,027,162
1913	2,617,100	5,867,179	2,336,509	205,742	11,026,530
1914	308,385	4,716,226	1,784,900	123,043	6,932,554
1915	—	1,170,606	472,597	49,548	1,692,661
1916	20,000	754,372	481,703	34,510	1,290,585
1917	—	706,084	347,354	33,869	1,087,307
1918	—	778,525	229,292	39,517	1,047,334
1919	—	1,703,961	505,652	118,718	2,328,331
1920	—	26,280,243		295,771	26,576,016
1921	—	29,523,833		470,615	29,994,448
1922	—	30,222,080		220,435	30,442,515
1923	—	9,566,187		148,474	9,714,661
1924	—	5,257,957		264,388	5,522,345
1925	14,354	6,009,585		265,384	6,289,323

HIGHEST AND LOWEST IRON AND STEEL PRICES, 1914–1925.

	1914. £ s. d.	1918. £ s. d.	1920. £ s. d.	1922. £ s. d.	1924. £ s. d.	1925. £ s. d.
Marked Iron Bars,	9 0 0	20 0 0	33 10 0	16 0 0	15 0 0	15 0 0
S. Staffs . . .	8 10 0	14 15 0	26 15 0	13 10 0	14 10 0	14 0 0
Common Iron Bars,	8 2 6	20 0 0	30 0 0	13 0 0	12 10 0	12 0 0
Cleveland . . .	7 10 0	14 15 0	24 5 0	10 10 0	12 0 0	11 0 0
Steel Ship Plates, 3/8-in.,	7 10 0	16 10 0	24 10 0	10 10 0	10 10 0	9 15 0
Middlesbrough .	7 0 0	11 10 0	20 0 0	9 0 0	9 10 0	7 5 0
Steel Ship Angles,	7 5 0	16 2 6	24 0 0	10 0 0	10 0 0	9 5 0
Middlesbrough .	6 15 0	11 2 6	19 10 0	8 12 6	9 5 0	7 0 0
Steel Ship Plates,	7 5 0	16 10 0	28 5 0	10 10 0	12 10 0	9 15 0
Glasgow . . .	6 17 6	11 10 0	21 10 0	8 5 0	9 15 0	8 0 0
Steel Ship Angles,	7 0 0	18 2 6	26 10 0	10 0 0	10 0 0	9 10 0
Glasgow . . .	6 7 6	11 2 6	19 10 0	8 5 0		7 10 0
Steel Boiler Plates,	8 5 0	17 10 0	31 0 0	14 10 0	14 0 0	13 10 0
Middlesbrough .	8 0 0	12 10 0	23 0 0	12 10 0	13 0 0	11 10 0
Steel Boiler Plates,	7 5 0	17 10 0	31 10 0	14 10 0	14 0 0	13 0 0
Glasgow . . .	7 0 0	12 10 0	24 0 0	12 10 0	13 0 0	11 0 0

WEEKLY TIME WAGE RATES OF SHIPYARD TIME WORKERS.

Grade of Workman.	Britain * (Tyne), October, 1925.	Germany (Hamburg). June, 1925.	Holland (Rotterdam). October, 1924.
	s. d.	s. d. s. d.	s. d.
Skilled	55 6	35 8 to 37 10	44 6
Semi-skilled . . .	41 6	32 11 to 35 1	38 9
Unskilled	38 6	28 1 to 30 3	33 0

* Time wages in British yards have varied in the following manner since 1914. The figures given are the average of recognised rates for a full normal week, at the dates given, in nine principal centres :—

	Aug. 1914. s. d.	Dec. 1920. s. d.	Mar. 1926. s. d.
Shipwrights	41 4	91 3	55 7
Ship joiners	40 0	101 4	57 9
Labourers	22 10	70 5	38 5

PRODUCTION OF IRON ORE IN PRINCIPAL COUNTRIES.

(Thousands of Tons, *i.e.* 000's omitted.)

Country.	1890.	1900.	1910.	1920.	1921.	1922.	1923.	1924.
Great Britain and Ireland	13,782	14,029	15,226	12,707	3,465	6,836	10,873	11,043
British Dominions	—	519	1,571	795	2,196	802	1,391	800*
British Empire	13,782	14,548	16,797	13,502	5,661	7,638	12,264	11,843
United States	16,036	27,549	56,890	57,598	29,282	47,128	69,350	54,035
Austria-Hungary	2,120	3,504	4,463	— †	735	1,140	1,192	— †
Belgium	169	244	121	17	58	62	115	— †
Czecho-Slovakia	—	—	—	1,036	788	308	664	— †
France	3,417	5,362	14,376	13,703	13,976	20,774	23,059	28,533
Germany	7,577	12,592	22,075	6,261	5,799	5,906	—	4,700*
Italy	218	243	542	384	275	306	336	169
Russia	1,701	6,004	4,523	161	133	221	477	2,098‡
Spain	6,443	8,539	8,531	4,693	2,561	2,728	3,401	4,813
Other Countries	5,973	11,755	14,468	21,739	8,396	14,338	21,240	— †
World total	57,436	90,340	142,786	119,094	67,664	100,549	132,098	149,000*

* Estimated. † Not available. ‡ Fiscal year ended June, 1925.

VALUES OF UNITED KINGDOM IMPORTS, EXPORTS AND RE-EXPORTS.

Year.	Imports.	Exports.			Total Imports and Exports.
		British Produce.	Foreign and Colonial Produce.	Total Exports.	
	£	£	£	£	£
1890	420,691,997	263,530,585*	64,721,533	328,252,118	748,944,115
1900	523,075,163	291,191,996	63,181,758	354,373,754	877,448,917
1910	678,257,024	430,384,772	103,761,045	534,145,817	1,212,402,841
1913	768,734,739	525,253,595	109,566,731	634,820,326	1,403,555,065
1914	696,635,113	430,721,357	95,474,166	526,195,523	1,222,830,636
1915	851,893,350	384,868,448	99,062,181	483,930,629	1,335,823,979
1916	948,506,492	506,279,707	97,566,178	603,845,885	1,552,352,377
1917	1,016,164,678	527,079,746	69,677,461	596,757,207	1,660,921,885
1918	1,316,150,903	501,418,997	30,945,081	532,364,078	1,848,514,981
1919	1,626,156,212	798,638,362	164,746,315	963,384,677	2,589,530,889
1920	1,932,648,881	1,334,469,269	222,753,331	1,557,222,600	3,489,871,481
1921	1,085,500,061	703,399,542	106,919,306	810,318,848	1,895,818,909
1922	1,003,098,899	719,507,410	103,694,670	823,202,080	1,826,300,979
1923	1,096,226,214	767,257,771	118,543,805	885,801,576	1,982,027,790
1924	1,279,844,597	795,364,581	104,148,957	899,513,538	2,179,358,135
1925	1,322,858,167	773,086,410	154,410,967	927,497,377	2,250,355,544

* Excluding value of ships and boats (new) with their machinery; this item is included in the later figures.

VALUES OF UNITED STATES IMPORTS AND EXPORTS, SHOWING PERCENTAGE CARRIED IN AMERICAN VESSELS.—(BY TEN-YEAR PERIODS GENERALLY.)

Fiscal Year.	By Sea (including all Great Lakes water-borne foreign Commerce).				By Land Vehicles.‡ Value in Dollars.	Total by Land and Sea. Value in Dollars.
	In American Vessels. Value in Dollars.	In Foreign Vessels. Value in Dollars.	Total. Value in Dollars.	Per cent. American Vessels.		
1821	113,210,462	14,358,235	127,559,679	88·7	—	—
1830	129,918,458	14,447,970	144,366,428	89·9	—	—
1840	198,424,609	40,802,856	239,227,465	82·9	—	—
1850	230,272,084	90,764,954	330,037,038	72·5	—	—
1860	507,247,757	255,040,793	762,288,550	66·5	—	—
1870	352,969,401	638,927,488	991,896,889	35·6	—	991,896,889
1880	258,346,577	1,244,265,433	1,482,612,011	17·4	20,981,393	1,503,593,404
1890	202,451,086	1,371,116,744	1,573,567,830	12·9	73,571,263	1,647,139,093
1900	195,084,192	1,894,444,424	2,089,528,616	9·3	154,895,650	2,224,424,266
1910	260,837,147	2,721,962,475	2,982,799,622	8·7	319,132,528	3,301,932,150
1913	381,032,496	3,392,028,429	3,773,060,925	10·1	505,831,459	4,278,892,384
1914	368,359,756	3,417,108,756	3,785,468,512	9·7	473,036,293	4,258,504,805
1915	571,931,912	2,420,693,563	3,992,625,475	14·3	450,133,605	4,442,759,080
1916	948,908,216	4,877,132,995	5,826,041,211	16·3	705,325,184	6,531,366,395
1917	1,452,086,468	6,367,408,665	7,819,495,133	18·6	1,129,908,446	8,949,403,579
1918	1,688,495,946	6,015,204,510	7,703,700,456	21·9	1,161,666,318	8,865,366,774
1919*	3,823,763,693	6,679,895,162	10,503,658,855	36·4	1,321,132,067	11,824,790,922
1920*	5,154,337,761	6,830,563,705	11,984,901,466	43·0	1,523,256,493	13,508,157,959
1921*	2,166,796,204	3,908,315,192	6,075,111,396	35·7	919,036,703	6,994,148,099
1922*	2,161,715,609	3,803,167,434	6,964,883,043	31·0	881,163,751	7,846,046,794
1923*	2,398,218,424	4,452,363,924	6,950,582,348	34·5	1,001,656,437	7,952,238,785
1924*	2,544,350,150	4,610,834,030	7,155,184,180	35·5	1,046,350,344	8,201,534,524
1925*	†2,608,747,000	5,287,267,000	7,896,014,000	33·0	1,150,252,000	9,046,266,000

* Up to and including 1918, the statistics given are for years ended on June 30; from 1919 onwards they are given for calendar years.
† Preliminary figures—liable to correction. ‡ Including Parcels Post.

IMPORTS AND EXPORTS OF THE UNDERMENTIONED COUNTRIES FOR THE YEARS 1913, 1924, AND 1925.

(In Millions of United States Dollars.)

Countries.	Imports. 1913.	Imports. 1924.	Imports. 1925.	Exports. 1913.	Exports. 1924.	Exports. 1925.
United Kingdom . .	3,741	5,643	6,388	3,089	4,156	4,479
United States . . .	1,793	3,610	4,226	2,484	4,591	4,910
France	1,625	2,103	2,097	1,328	2,219	2,165
Japan	364	1,010	1,056	315	744	946
Netherlands . . .	1,046	903	986	822	635	726
Spain	235	393	322	190	233	227
British India . . .	585	775	820	797	1,216	1,476
Australia	380	641	717	361	611	752
South Africa . . .	187	263	305	141	167	219
Norway	148	214	251	105	149	187
Belgium	895	816	846	701	645	689
Sweden	227	378	386	219	334	365
Brazil	327	305	418	318	423	496

ABOVE AS PERCENTAGES OF 1913 FIGURES.

Countries.	Imports. 1913.	Imports. 1924.	Imports. 1925.	Exports. 1913.	Exports. 1924.	Exports. 1925.
United Kingdom . .	100	151	170	100	135	145
United States. . .	100	201	236	100	185	198
France	100	130	129	100	168	163
Japan	100	278	290	100	236	300
Netherlands . . .	100	86	94	100	77	88
Spain	100	167	137	100	123	119
British India . . .	100	132	140	100	153	185
Australia	100	169	189	100	169	208
South Africa . . .	100	141	161	100	118	155
Norway	100	145	170	100	142	178
Belgium	100	91	95	100	92	98
Sweden	100	166	170	100	152	167
Brazil	100	93	128	100	133	156

NATIONALITY AND NET TONNAGE OF VESSELS WHICH ENTERED AND CLEARED WITH CARGOES IN THE FOREIGN TRADE OF THE UNITED KINGDOM FOR THE YEARS 1913 AND 1924.

Nationality.	Entrances.		Clearances.		Entrances.		Clearances.	
	1913.	1924.	1913.	1924.	1913.	1924.	1913.	1924.
	Tons.*	Tons.*	Tons.*	Tons.*				
British	32,292	36,857	40,101	41,699	65·8	66·5	59·1	63·9
Foreign :—								
Norwegian . . .	3,285	2,561	4,683	3,042	6·7	4·6	6·9	4·7
United States of America . . .	724	2,777	370	1,364	1·5	5·0	0·5	2·1
Swedish	1,891	1,687	3,016	2,036	3·9	3·0	4·5	3·1
Dutch	1,702	2,426	2,536	2,951	3·5	4·4	3·7	4·5
Danish	1,161	1,490	2,613	2,333	2·4	2·7	3·9	3·6
French	999	1,636	1,975	3,660	2·0	3·0	2·9	5·6
Belgian	1,369	979	957	1,161	2·8	1·8	1·4	1·8
Japanese	140	458	282	476	0·3	0·8	0·4	0·7
Spanish	1,060	959	1,694	1,383	2·2	1·7	2·5	2·1
Italian	122	403	955	830	0·2	0·7	1·4	1·3
Russian	678	—	937	—	1·4	—	1·4	—
Greek	221	418	1,072	828	0·4	0·8	1·6	1·3
German	3,166	1,921	5,730	2,294	6·4	3·5	8·5	3·6
Austro-Hungarian .	128	—	715	—	0·3	—	1·0	—
Other Nationalities	125	797	185	1,191	0·2	1·5	0·3	1·7
Total Foreign .	16,772	18,512	27,720	23,549	34·2	33·5	40·9	36·1
Total British and Foreign . .	49,064	55,369	67,821	65,248	100·0	100·0	100·0	100·0

	Entrances and Clearances.		Percentages.	
	1913.	1924.	1913.	1924.
	Tons.*	Tons.*		
British	72,393	78,556	62	65
Foreign	44,490	42,061	38	35
. Total . . .	116,883	120,617	100	100

* *Figures in thousands*, i.e. *hundreds omitted.*

NOTE.—For 1924 figures of trade with the Irish Free State are included.

NATIONALITY AND NET TONNAGE OF VESSELS WHICH ENTERED AND CLEARED WITH CARGOES AND IN BALLAST IN THE FOREIGN TRADE OF THE UNITED STATES OF AMERICA FOR THE YEARS ENDED 30TH JUNE, 1913, AND 31ST DECEMBER, 1924.

Nationality.	Entrances.		Clearances.		Percentages. Entrances.		Percentages. Clearances.	
	1913.	1924.	1913.	1924.	1913.	1924.	1924.	1924.
	Tons.*	Tons.*	Tons.*	Tons.*				
American	5,241	29,628	5,289	30,091	13·8	43·4	14·1	43·6
British	19,697	24,027	19,360	23,949	51·9	35·2	51·5	34·7
Other Nationalities:—								
Austrian	438	—	424	—	1·2	—	1·1	—
Belgian	352	359	356	380	0·9	0·5	0·9	0·6
Danish	481	890	446	930	1·3	1·3	1·2	1·4
Dutch	1,049	1,334	1,077	1,268	2·8	2·0	2·9	1·8
French	1,027	1,490	1,034	1,561	2·7	2·2	2·8	2·3
German	4,578	1,339	4,587	1,309	12·1	2·0	12·2	1·9
Italian	838	1,745	802	1,780	2·2	2·6	2·1	2·6
Norwegian . . .	2,774	3,013	2,798	2,943	7·3	4·4	7·4	4·3
Portuguese . . .	14	—	15	1	—	—	—	—
Russian	130	—	130	—	0·3	—	0·3	—
Spanish	391	481	374	480	1·0	0·7	1·0	0·7
Swedish	60	625	65	632	0·2	0·9	0·2	0·9
All other Nationalities	903	3,261	809	3,586	2·3	4·8	4·8	5·2
Total . . .	37,973*	68,292*	37,566*	68,910*	100·0	100·0	100·0	100·0

	Entrances and Clearances.			Percentage of Total.		Percentage. Increase or Decrease.
	1913.	1924.	Difference.	1913.	1924.	
	Tons.*	Tons.*	Tons.*			
American . . .	10,530	59,719	Increase 49,189	14	44	Increase 467
British	39,057	47,976	Increase 8,919	52	35	Increase 23
Other Nationalities	25,952	29,507	Increase 3,555	34	21	Increase 14
Total . . .	75,539*	137,202*	Increase 61,663*	100	100	Increase 81

* *Figures in thousands*, i.e. *hundreds omitted.*

PROPORTION OF U.S.A. EXPORTS CARRIED IN BRITISH, AMERICAN, AND OTHER VESSELS, AS SHOWN BY THE CLEARANCES WITH CARGOES IN THE OVERSEAS TRADE OF THE UNITED STATES OF AMERICA.

—	Clearances with Cargoes.			
	1913.	Percentage 1913.	1924.	Percentage 1924.
	Net Tons.		Net Tons.	
British Vessels	21,825,638	49	23,949,000	38
American Vessels	10,917,760	25	20,465,000	33
All other Vessels	11,739,449	26	24,496,000	29
Total Clearances with Cargoes .	44,482,847	100	68,910,000	100

NUMBER AND NET TONNAGE OF VESSELS THAT PASSED THROUGH THE SUEZ CANAL IN THE YEARS 1913, 1923, 1924, AND 1925, DISTINGUISHING THE PRINCIPAL NATIONALITIES.

Nationality of Vessels.	Number of Passages.				Net Tonnage of Vessels.				Numbers as Percentages of Total.				Tonnages as Percentages of Total.			
	1913.	1923.	1924.	1925.	1913.	1923.	1924.	1925.	1913.	1923.	1924.	1925.	1913.	1923.	1924.	1925.
British	2951	2839	2973	3099	12,052,484	14,264,214	14,994,681	16,016,439	58·0	61·5	58·0	58·1	60·2	62·8	59·7	59·8
Japanese . . .	68	172	149	188	343,732	986,283	871,529	1,066,941	1·3	3·7	2·9	3·5	1·7	4·4	3·4	4·0
Dutch	342	451	489	526	1,287,354	2,178,058	2,488,389	2,699,365	6·7	9·8	9·6	9·9	6·4	9·6	9·9	10·1
French . . .	256	259	304	331	927,787	1,294,400	1,497,487	1,628,215	5·0	5·6	5·9	6·2	4·6	5·7	6·0	6·1
Italian	110	256	378	360	290,576	1,042,754	1,483,408	1,416,386	2·2	5·6	7·4	6·7	1·5	4·6	5·9	5·3
Danish	56	64	78	83	171,848	299,695	344,868	359,918	1·1	1·4	1·5	1·6	0·9	1·3	1·4	1·3
Norwegian . .	44	87	105	91	93,313	335,597	367,418	371,630	0·9	1·9	2·1	1·7	0·5	1·5	1·5	1·4
American (U.S.) .	8	114	137	132	7,476	614,128	795,021	811,803	0·2	2·5	2·7	2·5	—	2·7	3·2	3·0
Swedish . . .	33	60	61	57	122,957	275,264	270,197	262,903	0·7	1·3	1·2	1·1	0·6	1·2	1·1	0·9
Greek	17	20	85	54	54,560	61,031	131,351	166,426	0·3	0·4	0·7	1·0	0·3	0·3	0·5	0·6
Spanish . . .	26	13	18	22	75,643	36,718	52,443	68,478	0·5	0·3	0·4	0·4	0·4	0·2	0·2	0·3
German . . .	778	247	350	359	3,352,287	1,213,691	1,646,872	1,791,228	15·3	5·4	6·8	6·7	16·7	5·4	6·6	6·7
Austria-Hungarian	246	—	—	—	845,830	—	—	—	4·8	—	—	—	4·2	—	—	—
Russian	110	23	15	6	340,595	73,896	62,060	35,080	2·2	0·5	0·3	0·1	1·7	0·3	0·2	0·2
All others . . .	40	16	30	29	67,422	54,433	104,197	67,123	0·8	0·1	0·5	0·5	0·3	0·0	0·4	0·3
Total . .	5085	4621	5122	5337	20,033,802	22,730,162	25,109,921	26,761,935	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

NOTE.—The above figures include not only Merchant Vessels and Mail Steamers, but also Warships and Transports as well as Government Chartered Vessels.

Number and Net Tonnage of Commercial Vessels that passed through the Panama Canal in the Years ended 30th June, 1919, 1920, 1921, 1922, 1923, 1924 and 1925, distinguishing the Principal Nationalities.

Note.—Commercial Vessels include all Vessels except those of the United States Government, or chartered by the U.S. Government to carry Government supplies, and Vessels of less than 10 tons measurement.

Nationality.	Number of Vessels.							Net Tonnage of Vessels.						
	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
British	607	753	972	935	1,065	1,265	1,211	1,915,744	2,760,188	3,978,329	3,795,526	4,892,338	6,097,611	5,949,391
American (U.S.A.)*	784	1,129	1,210	1,095	1,994	2,947	2,326	2,257,342	3,791,088	4,861,761	4,971,509	10,208,536	15,806,899	12,271,387
Norwegian	128	106	140	113	147	136	192	497,555	397,632	548,227	385,007	597,359	546,633	672,663
Japanese	87	118	136	189	163	171	172	341,064	515,243	613,245	872,466	753,219	815,468	823,869
Chilian	93	79	63	53	62	47	29	253,561	212,000	159,727	150,398	201,411	176,472	129,183
Danish	79	9	60	53	65	65	42	213,534	32,221	236,512	227,473	240,053	245,929	160,299
Peruvian	64	75	60	60	80	70	73	166,956	191,689	157,495	161,930	216,829	189,046	188,784
Dutch	19	29	50	66	109	102	102	88,299	152,535	248,801	293,428	510,970	551,761	531,251
French	104	60	44	51	56	83	105	253,774	114,664	155,889	190,171	252,333	386,640	489,806
Spanish	5	41	44	9	14	45	43	11,066	106,651	117,400	27,264	41,201	172,572	159,579
Other Nationalities	54	79	113	112	212	299	378	126,095	272,133	338,490	342,287	691,537	1,159,847	1,488,939
Totals	2,024	2,478	2,892	2,736	3,967	5,230	4,673	6,124,990	8,546,044	11,415,876	11,417,459	18,605,786	26,148,878	22,855,151

Above as Percentages.

	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
British	30·0	30·4	33·6	34·2	26·8	24·2	25·9	31·3	32·3	34·8	33·3	26·3	23·3	26·0
American (U.S.A.)*	38·7	45·6	41·8	40·0	50·3	56·3	49·7	36·8	44·4	42·6	43·5	54·9	60·5	53·7
Norwegian	6·3	4·3	4·9	4·1	3·7	2·6	4·1	8·1	4·7	4·8	3·4	3·2	2·1	2·9
Japanese	4·3	4·8	4·7	6·9	4·1	3·3	3·8	5·6	6·0	5·4	7·6	4·0	3·1	3·6
Chilian	4·6	3·2	2·2	2·0	1·6	0·8	0·6	4·1	2·5	1·4	1·3	1·1	0·7	0·6
Danish	3·9	0·3	2·1	2·0	1·6	1·2	0.9	3·5	0·4	2·1	2·0	1·3	0·9	0·7
Peruvian	3·2	3·0	2·1	2·2	2·0	1·3	1·6	2·7	2·2	1·4	1·4	1·2	0·7	0·8
Dutch	0·9	1·2	1·7	2·4	2·7	2·0	2·2	1·4	1·8	2·2	2·6	2·7	2·1	2·3
French	5·1	2·4	1·5	1·8	1·4	1·6	2·2	4·2	1·3	1·4	1·7	1·4	1·5	2·2
Spanish	0·3	1·6	1·5	0·3	0·3	0·9	0·9	0·2	1·2	1·0	0·2	0·2	0·7	0·7
Other Nationalities	2·7	3·2	3·9	4·1	5·5	5·8	8·1	2·1	3·2	2·9	3·0	3·7	4·4	6·5
Totals	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

* Includes Vessels engaged in the coasting trade of the U.S.A.,w hich is carried on *entirely* by National Ships.

CARGOES (IN TONS WEIGHT) CARRIED IN COMMERCIAL VESSELS THAT PASSED THROUGH THE PANAMA CANAL DURING THE YEARS ENDED 30TH JUNE, 1919, 1920, 1921, 1922, 1923, 1924, AND 1925, DISTINGUISHING THE PRINCIPAL NATIONALITIES.

Nationality of Vessels.	Weight of Cargoes carried.							
	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
British . .	2,615,675	1,876,939	2,830,268	3,738,257	3,329,861	4,929,317	6,051,842	5,917,058
American (U.S.A.) .	2,098,277	2,758,886	4,547,140	5,163,025	4,950,519	11,055,150	16,654,435	13,080,200
Norwegian .	1,090,823	577,679	404,323	637,887	408,268	704,292	539,101	842,708
Japanese .	407,399	503,427	726,338	758,617	1,044,515	943,400	935,245	946,916
Chilian . .	153,259	161,340	104,738	61,737	46,182	76,670	107,147	96,369
Danish . .	420,063	325,277	42,533	322,059	272,779	307,876	317,274	201,577
Peruvian .	143,344	121,524	119,418	105,322	64,370	111,519	102,136	101,005
Dutch . .	233,063	119,297	128,442	216,488	290,573	487,957	573,929	619,017
French . .	159,859	286,812	125,249	132,836	139,463	230,175	407,249	481,526
Spanish . .	35,394	10,047	101,563	143,076	23,701	32,178	67,903	72,011
Other Nationalities .	174,875	175,393	244,487	319,910	314,679	689,341	1,238,449	1,600,449
Totals .	7,532,031	6,916,621	9,374,499	11,599,214	10,884,910	19,567,875	26,994,710	23,958,836

ABOVE AS PERCENTAGES.

	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
British . .	34·7	27·1	30·2	32·2	30·6	25·2	22·4	24·7
American (U.S.A.) .	27·9	39·9	48·5	44·5	45·5	56·5	61·7	54·6
Norwegian .	14·5	8·4	4·3	5·5	3·7	3·6	2·0	3·5
Japanese .	5·4	7·3	7·7	6·5	9·6	4·8	3·5	4·0
Chilian . .	2·0	2·3	1·1	0·5	0·4	0·4	0·4	0·4
Danish . .	5·6	4·7	0·5	2·8	2·5	1·6	1·2	0·8
Peruvian .	1·9	1·8	1·3	0·9	0·6	0·6	0·4	0·4
Dutch . .	3·1	1·7	1·4	1·9	2·7	2·5	2·1	2·6
French . .	2·1	4·2	1·3	1·2	1·3	1·2	1·5	2·0
Spanish . .	0·5	0·1	1·1	1·2	0·2	0·2	0·3	0·3
Other Nationalities .	2·3	2·5	2·6	2·8	2·9	3·4	4·5	6·7
Totals .	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

OCEAN DISTANCES FROM THE BRITISH ISLES.

(Steaming Distances in Nautical Miles.)

I.—Continent.

	Archangel.	Christiania.	Copenhagen.	Stockholm.	Danzig.	Hamburg.	Amsterdam.	Rotterdam.	Antwerp.	Havre.	Bordeaux.	Bilbao.	Lisbon.	Gibraltar.
Cardiff .	2,259†	1,060*	1,126*	1,498*	1,400*	839	577	553	541	367	531	561	878	1,145
Glasgow .	2,036†	930†	996†	1,408†	1,280†	490	818	794	782	610	778	808	1,093	1,400
Liverpool .	2,104†	1,005†	1,066†	1,478†	1,340†	942	711	687	675	503	671	701	1,010	1,290
London .	2,106	702	700	1,180	989	427	188	177	180	198	682	712	1,058	1,325
Sunderland	1,755	520	586	998	860	413	258	266	327	397	896	915	1,225	1,615

* South about. † North about.

II.—Mediterranean, Black Sea and Red Sea.

	Marseilles.	Naples.	Messina.	Malta.	Genoa.	Trieste.	Athens.	Constantinople.	Odessa.	Batoum.	Smyrna.	Alexandria.	Port Said.	Aden.
Cardiff .	1,870	2,080	2,170	2,135	2,039	2,804	2,630	2,910	3,230	3,490	2,765	2,922	3,075	4,515
Glasgow .	2,085	2,295	2,475	2,350	2,254	3,019	2,864	3,125	3,445	3,705	2,980	3,137	3,300	4,730
Liverpool .	1,975	2,265	2,367	2,240	2,144	2,909	2,759	3,069	3,335	3,595	2,870	3,083	3,290	4,620
London .	2,050	2,260	2,354	2,315	2,219	2,984	2,810	3,190	3,410	3,670	2,945	3,122	3,248	4,695
Sunderland	2,222	2,540	2,520	2,511	2,381	3,164	2,990	3,370	3,690	3,950	3,225	3,382	3,445	4,975

III.—Africa and Eastern Atlantic, etc.

	Azores.	St. Vincent (C.V.I.)	Las Palmas.	Bathurst.*	Freetown.	Lagos.	Ascension.	Loanda.†	St. Helena.	Cape Town.	Durban.	Mauritius.‡	Melbourne ‡ (Australia).	Hobart ‡ (Tasmania).
Cardiff .	1,330	2,345	1,523	2,484	2,838	3,968	3,775	4,841	4,472	5,947	6,721	8,273	11,761	11,785
Glasgow .	1,495	2,560	1,745	2,706	3,059	4,189	3,940	5,056	4,637	6,168	6,942	8,494	11,982	12,006
Liverpool .	1,385	2,450	1,655	2,616	2,962	4,097	3,830	4,946	4,527	6,076	6,850	8,402	11,890	11,914
London .	1,460	2,525	1,699	2,660	3,008	4,138	3,900	5,021	4,597	6,117	6,891	8,443	11,931	11,955
Sunderland	1,740	2,805	1,890	2,851	3,199	4,329	4,185	5,301	4,882	6,308	7,082	8,834	12,122	12,146

* *Via* Teneriffe and Dakar. † *Via* St. Vincent (C.V.I.) ‡ *Via* Cape Town.

IV.—Indian Ocean, etc. (*via* Suez).

	Karachi.	Bombay.	Colombo.	Zanzibar.	Mauritius.	Madras.	Calcutta.	Rangoon.	Singapore.	Batavia.	Freemantle (W. Australia).	Adelaide.	Melbourne.	Hobart.
Cardiff .	5,930	6,150	6,615	6,195	6,825	7,016	7,610	7,845	8,165	8,450	9,745	10,712	11,070	11,100
Glasgow .	6,145	6,365	6,830	6,433	7,040	7,120	7,854	8,060	8,380	8,635	9,960	10,953	11,285	11,315
Liverpool .	6,135	6,255	6,720	6,220	6,930	7,065	7,750	7,955	8,270	8,555	9,850	10,847	11,175	11,330
London .	6,110	6,330	6,535	6,295	7,005	7,040	7,795	7,935	8,345	8,630	9,665	10,890	11,250	11,380
Sunderland	6,390	6,610	6,975	6,575	7,285	7,250	7,986	8,135	8,625	8,815	10,105	11,090	11,420	11,560

V.—China, Japan, etc. (*via* Suez).

	Saigon.	Hong Kong.	Shanghai.	Nagasaki.	Yokohama.	Vladivostock.*	Fiji Islands.	Manilla.	Brisbane (*via* Torres Strait.)	Sydney (N.S.W.)	Auckland (N.Z.)	Wellington (N.Z.)	Honolulu.	San Francisco.
Cardiff .	8,805	9,718	10,470	10,595	11,065	11,250	11,540	9,470	11,788	11,520	12,400	12,420	13,150	13,490
Glasgow .	9,020	9,815	10,712	10,819	11,280	11,414	11,755	9,814	12,028	11,764	12,655	12,660	13,365	13,705
Liverpool .	8,910	9,856	10,665	10,700	11,170	11,355	11,645	9,575	11,924	11,600	12,545	12,560	13,955	13,795
London .	8,985	9,900	10,650	10,775	11,245	11,430	11,720	9,750	11,961	11,708	12,625	12,612	14,010	13,800
Sunderland	9,265	10,060	10,820	11,055	11,525	11,710	12,000	9,930	12,152	11,900	12,790	12,850	14,226	13,950

* *Via* Nagasaki.

VI.—America.

	Quebec.	Halifax, N.S.	New York.	Boston.	Jamaica.	New Orleans.	Panama.	Colon.	Pernambuco.	Bahia.	Rio de Janeiro.	Montevideo.	Buenos Ayres.	Valparaiso.
Cardiff .	2,750	2,505	3,065	2,782	4,030	4,510	4,527	4,487	3,950	4,375	5,020	5,990	6,100	8,690
Glasgow .	2,618	2,390	3 280	3,065	4,245	4,725	4,665	4,625	4,165	4,540	5,235	6,205	6,315	8,905
Liverpool .	2,655	2,455	3,052	2,805	4,135	4,615	4,570	5,530	4,055	4,430	5,125	6,095	6,205	8,795
London .	3,072	2,685	3,245	3,030	4,210	4,790	4,782	4,742	4,130	4,505	5,200	6,370	6,280	8,870
Sunderland	3,240	2,665	3,450	2,803	4,490	4,970	4,975	4,935	4,410	4,785	5,480	6,450	6,560	9,250

ENTRANCES AND CLEARANCES IN THE FOREIGN TRADE OF THE UNDERMENTIONED COUNTRIES FOR THE YEARS 1913, 1923, AND 1925.

Note.—C=With Cargo only. C & B=With Cargo and in Ballast.

Countries.		Entrances.			Clearances.		
		1913.	1923.	1925.	1913.	1923.	1925.
		Thousand tons net.	Thousand tons net.	Thousand tons net.	Thousand tons net.	Thousand tons net.	Thousand tons net.
United Kingdom	C	49,068	51,084	52,122	67,824	70,668	58,027
United States of America	C & B	53,280	66,319	69,378	53,796	66,624	70,229
France	C	34,512	41,818	43,993	26,112	30,750	36,828
Japan	C & B	24,720	37,548	43,031	24,900	37,056	43,068
Netherlands	C	17,148	16,272	21,776	11,016	11,532	18,528
Spain	C & B.	25,788	24,588	*	28,992	20,772	*
British India	C	6,700	6,573	7,028	8,256	7,787	8,412
Australia	C & B.	5,364	4,848	5,592	5,232	4,896	5,604
South Africa	C & B	5,352	5,137	5,340	5,280	5,005	5,244
Norway	C	3,756	3,192	3,426	4,740	4,092	5,244
Belgium	C	16,908	20,448	23,580	16,896	20,304	23,604
Sweden	C & B	13,764	12,192	13,500	17,004	12,337	13,404
Germany	C & B	26,580	30,372	31,360	26,640	30,900	33,636

ABOVE AS PERCENTAGES OF 1913 FIGURES.

United Kingdom	100	104	106	100	104	86
United States of America	100	127	*	100	124	*
France	100	121	128	100	117	141
Japan	100	152	174	100	149	177
Netherlands	100	95	127	100	105	168
Spain	100	95	*	100	72	*
British India	100	98	105	100	94	102
Australia	100	90	104	100	94	107
South Africa	100	96	100	100	95	99
Norway	100	85	91	100	86	111
Belgium	100	121	139	100	120	140
Sweden	100	89	98	100	72	79
Germany	100	114	118	100	116	126

* Figures not available.

LIST OF THE PRINCIPAL COMMERCIAL FUEL-OIL BUNKERING STATIONS ESTABLISHED THROUGHOUT THE WORLD.

VARIOUS publications, British and American, interested in oil or shipping matters furnish particulars from time to time of fuel-oil bunkering stations, either by way of more or less comprehensive general lists or of announcements by oil-distributing companies. Some of the more comprehensive lists, whilst valuable as showing the widespread provision of fuel oil supplies already made or contemplated, do not in all cases, however, distinguish between installations in actual operation and those under construction, or clearly indicate whether Government installations are the only ones existing at particular ports. In compiling the following list from many sources, our aim has been to specify the principal bunkering ports at which commercial oil installations are in operation. Whilst absolute accuracy cannot be guaranteed, much care has been taken to eliminate errors.

Aalborg (Denmark)
Aarhus
Abadan (Persia)
Aberdeen
Abo (Finland)
Adelaide
Aden
Ajaccio
Alexandria
Algiers
Almeria
Amoy (China)
Amsterdam
Ango-Ango (Congo)
Antilla
Antofagasta (Chile)
Antwerp
Aomori
Arica (Chile)
Astoria
Auckland (N.Z.)
Augusta (Sicily)
Avonmouth
Azores (Ponta Delgada)
Bahia (Brazil)
Bahia Blanca (Arg.)
Balboa (Panama)
Balik Pappan (Borneo)
Baltimore
Bangkok (Siam)
Barcelona
Barranquilla (Colombia)
Barrow
Barton
Basrah
Batavia
Baton Rouge (La.)
Batum
Bayonne, N.J.
Baytown
Beaumont (Texas)
Beira
Belfast
Belize (Honduras)
Bergen
Bermuda
Bilbao
Birkenhead
Bizerta (Tunis)
Boelbaai Ceram
Boma (Congo)
Bombay
Bordeaux
Boston (U.S.A.,
Bourgas (Turkey)
Bremen
Brest
Bridgetown (Barbadoes)
Brighton (Trinidad)
Brixham
Brunsbuettel-Ostermoor
Brunswick
Buenos Aires
Cadiz
Calcutta
Caleta Buena (Chile)
Callao
Campana
Canton
Cape Town
Cardiff
Casablanca
Cebu (Philippines)
Ceram (D.E.I.)
Ceuta
Charleston
Cherbourg
Chittagong (India)
Cienfuegos (Cuba)
Civita Vecchia
Claxton Bay (Trinidad)
Cochin (India)
Colombo
Colon (Pan. Canal)
Conception del Uruguay
Constantinople
Constanza
Copenhagen
Corinto (Nicaragua)
Cork
Corunna
Cristobal
Curacao
Dakar (W. Africa)
Dantzig
Destrehan
Donges
Dover
Dublin
Dunkirk
Durban
Emden
Eten (Peru)
Eureka
Fall River (Mass.)
Falmouth
Fayal
Ferrol
Folkestone
Foochow
Fort William (Ont.)
Foynes
Fredericia
Fremantle
Funchal
Galveston
Gemsah
Genoa
Georgetown
Gibraltar
Glasgow
Gothenburg
Granatello (Italy)
Graney Island (Va.)
Grangemouth
Granton
Grimsby
Guayaquil
Gulf Port (Miss.)
Halifax (Canada)
Hamburg
Hamilton (Ont.)
Hankow
Harwich
Havana
Havre
Helsingfors
Hong Kong
Honolulu
Houston (Texas)
Hull
Hurghada
Ichang (China)
Ilo Ilo (Philip. Is.)
Immingham
Iquique (Chile)
Itosaki
Jacksonville (Fla.)
Jarrow-on-Tyne
Junin (Chile)
Karachi
Ketchikan
Kettle Point (R I.)
Key West
Kiel
Kingston (Jamaica)
Kiu Kiang
Kobe
La Guayra (Venez.)
La Pallice
La Plata (Argentine)
La Rochelle
Las Palmas
Leghorn
Leith
Levis
Lisbon
Liverpool
Lobitos
London :
Thameshaven, Purfleet, etc.

Lorient
Los Angeles
Lourenço Marques
Macassar (Celebes)
Madras
Malmo
Malta
Manati (Cuba)
Manchester Ship Canal
Manila
Maracaibo (Venez.)
Marmagoa (India)
Marseilles
Mantanzas (Cuba)
Mauritius
Mejillones (Chile)
Melbourne
Messina (Sicily)
Middlesbrough
Minatitlan (Mexico)
Miri
Mobile (Alabama)
Mollendo (Peru)
Mombasa
Monopoli
Montevideo
Montreal
Nagasaki
Naples
Neuvitas (W. Indies)
Newcastle-on-Tyne
New Orleans
New York
Niigata (Japan)
Nonai
Nordenham
Norfolk (Va.)
Nyborg
Odense (Denmark)
Oleum (Cal., U.S.A.)
Oran
Oslo
Pago Pago (Samoa)
Paitaz (Peru)
Palembang (Sumatra)
Palermo
Palo Blanco (Mex.)
Pangkalan - Berandan
Papeete (Tahiti)
Para (Brazil)
Paramaribo (Dutch Guiana)
Passaic (N.J.)
Payta
Penang
Pensacola (Florida)
Perim
Pernambuco
Philadelphia
Piræus
Pisagua
Plymouth
Point à Pierre (Trinidad)
Point Fortin (Trinidad)
Point Wells
Ponce
Ponta Delgada (Azores)
Port Arthur (Texas)
Port Edgar
Portici
Portishead
Portland (Maine)
Portland (Ore.)
Port of Spain
Port St. Luis du Rhone (France)
Port Said
Port Sudan
Prince Rupert (B.C.)
Providence (R.I.)
Puerto Barrios (Guatemala)
Puerto Cabello (Venez.)
Puerto Mexico
Puloe Samboe
Pulo Bukom
Pulo Solsoe
Quebec
Rangoon
Regla (Cuba)
Richmond (Va.)
Rio de Janeiro
Rochefort
Rosyth
Rotterdam
Rouen
Sabang
Sabine
Saigon (French Cochin China)
Saitozaki
St. Georges
St. John (N.B.)
St. Nazaire
St. Thomas
St. Vincent
Salina Cruz (Mex.)
Salinas (Chili)
Salonica
San Antonio (Chile)
San Diego
San Domingo
San Francisco
San Juan (P. Rica)
San Luis Obispo (Cal., U.S.A.)
San Pedro (Cal.)
Santander
Santos (Brazil)
Sarnia
Savannah
Savona
Seattle (Wash.)
Shanghai
Singapore
Smyrna
Soerabaya (Java)
Southampton
South Shields
Spezia
Stavanger
Stettin
Stockholm
Strasburg
Suez
Sunderland
Supe (Peru)
Svolvaer (Norway)
Swansea
Swatow (China)
Sydney
Tacoma
Talara (Peru)
Taltal (Chile)
Tambes (Peru)
Tampa (Florida)
Tampico (Mexico)
Tarakan (Borneo)
Teneriffe
Texas City
Tientsin
Tocopilla (Chile)
Toronto
Toulon
Trieste
Trinidad
Trondjhem
Tsuchizaki (Japan)
Tunis
Tuticorin (India)
Tuxpan (Mexico)
Vado
Vallo (Norway)
Valparaiso
Vancouver
Venice
Vera Cruz (Mexico)
Victoria (B.C.)
Vlaardingen
Wellington (N.Z.)
Willbridge
Willemstad (Curacao)
Yati (Paraguay)
Yokohama
Zanzibar

BRITISH NAVAL AND SHIPPING ORGANISATIONS.

Aberdeen Shipbuilders' Association: Chairman, A. Hall-Wilson; Secretary, James Hay: Address, 2, Union Terrace, Aberdeen, N.B.

Amalgamated Engineering Union: Chairman, J. T. Brownlie, O.B.E.; Secretary, A. H. Smethurst: Address, 110, Peckham Road, London, S.E. 15.

Amalgamated Marine Workers' Union: President, A. Cannon; Secretary, J. McKinlay: Address, 41, Gower Street, London, W.C. 1.

Average Adjusters, Association of: Chairman, Rt. Hon. Lord Merrivale of Walkhampton; Secretary, A. F. Greenwood: Address, 70, New Broad Street, London, E.C. 2.

Baltic Mercantile and Shipping Exchange, Ltd.: Chairman, Sir Ernest W. Glover, Bart.; Secretary, J. A. Findlay: Address, 24–28, St. Mary Axe, London, E.C. 3.

Barrow Shipbuilders' Association: Chairman, John Barr, C.B.E.; Secretary, G. P. Lancaster: Address, Naval Construction Works, Barrow-in-Furness.

Belfast Shipowners' Association: Chairman, Sir George S. Clark, Bt.; Telephones, Belfast 2097–99; Telegrams, "Heyn, Belfast": Address, Head Line Buildings, Victoria Street, Belfast.

Birkenhead Shipbuilding Employers' Association: Chairman, R. S. Johnson, O.B.E.; Secretary, H. M. Hinchliffe: Address, Shipbuilding and Engineering Works, Birkenhead.

Blacksmiths' and Ironworkers' Society of Great Britain and Ireland: Secretary, William Lorimer: Address, 177, Hill Street, Charing Cross, Glasgow.

Boiler Makers and Iron Shipbuilders' Society: Chairman, Mark Hodgson; Vice-Chairman, C. W. Church; General Secretary, John Hill, J.P.; Assistant Secretary, Councillor John Barker: Address, Lifton House, Eslington Road, Newcastle-on-Tyne.

Border Counties Engineering Trades Employers' Association: Secretary, James Cameron: Address, Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

Bristol Steamship Owners' Association: Chairman, Major Mark Whitwill, D.S.O., M.C.; Hon. Secretary, A. S. Ray; Telephone, Bristol 1836: Address, 18, St. Augustine's Parade, Bristol.

Britannia Steam Ship Insurance Association, Ltd.: Chairman, Sir Ernest W. Glover, Bt.; Managers, Tindall Riley & Co.: Address, 17, Gracechurch Street, London, E.C. 3.

British Bankers' Association: Chairman, Sir Felix Schuster, Bt.; Secretary, E. Sykes; Telephone, Avenue 3103: Address, 5, Bishopsgate, E.C. 2.

British Chambers of Commerce, Association of: President, Stanley Machin, J.P.; Deputy President, Gilbert C. Vyle; Secretary, R. B. Dunwoody, C.B.E.; Telephone, Victoria 3154; Address, 14, Queen Anne's Gate, S.W. 1.

British Coal Exporters Federation: Secretary, R. M. Stewart; Telephone, Victoria 3679: Address, 27, Abingdon Street, S.W. 1.

British Coasting & Near Trades' Shipowners' Association: Chairman, T. E. Brown; Secretary, J. G. Rutherford: Address, 38, West Sunniside, Sunderland.

British Cold Storage and Ice Association: Chairman, Sir Gordon H. Campbell; Hon. Secretary, J. Raymond: Address, Weavers' Hall, 22, Basinghall Street, London, E.C. 2.

British Corporation for the Survey and Registry of Shipping: Hon. President, Sir Archibald Denny, Bt., LL.D.; Chairman, Robert Clark; Vice-Chairman, Sir Wm. H. Raeburn, Bt.; Chief Surveyor, J. Foster King, C.B.E.; Secretary, John Fleming; Telephone Numbers, Cent. 8152 and 8153; Telegraphic Address, "Seaworthy, Glasgow": Address, 14, Blythswood Square, Glasgow.

British Engineering Standards Association: Chairman, Sir Archibald Denny, Bart.; Secretary, C. le Maistre, C.B.E.; Telephone, Victoria 3127: Address, 28, Victoria Street, London, S.W. 1.

British Engineers' Association, Inc.: President, H. J. Ward, M.A.; Secretary, Alfred Parker: Address, 32, Victoria Street, London, S.W. 1.

British Industries, Federation of: President, Sir Max Muspratt, Bt., J.P.; Chairman, Sir Wm. B. Peat, C.V.O.; Deputy Chairman, Sir E. Fitzjohn Oldham; Director,

R. T. Nugent; Secretary, D. L. Walker; Telephones, Regent 6050–6056; Telegrams, "Fobustry, Piccy, London": Address, 39, St. James's Street, London, S.W. 1.

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British Nautical Instrument Trade Association: Secretaries, Biggart and Lumsden: Address, 105, West George Street, Glasgow.

British Passenger Agents' Association: President, H. K. Scott; Hon. Secretary, Charles Wright: Address, 22, Watergate Street, Chester.

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British Shipowners' Mutual Protection and Indemnity Association, Ltd.: Managers, A. Bilbrough & Co., Ltd.: Address, 23, Rood Lane, London, E.C. 3.

Bureau Veritas: Chief Representative for the U.K., G. M. Milne: Address, 155, Fenchurch Street, London, E.C. 3.

Cardiff and Bristol Channel Incorporated Shipowners' Association: Chairman, J. W. Duncan; Secretary, W. R. Hawkins; Telephone, Cardiff, 242; Telegrams, "Ships, Cardiff"; Address, 6, The Exchange, Cardiff.

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Engineering and Shipbuilding Draughtsmen, Association of: Secretary, Peter Doig: Address, 96, St. George's Square, London, S.W. 1.

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Manchester Marine Insurance Association: Chairman, John Speers; Vice-Chairman, J. Brockbank; Secretary, Geo. Lombers; Telephone, Central 1228: Address, Parr's Bank Buildings, 3, York Street, Manchester.

Manchester Steamship Owners' Association: Chairman, T. Fischer; Hon. Secretary, T. Whyman; Telephone, City 2060, Manchester; Telegrams, "Membership, Manchester": Address, 3, Cathedral Street, Manchester.

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Master Lightermen and Barge Owners (Port of London), Association of: President, Frederick Philp; Secretary, E. J. G. Weare: Telephone, Royal 2280: Address, 24–25, Great Tower Street, London, E.C. 3.

Mercantile Marine Office: Chief Superintendent, P. O. Griffiths, R.D., R.N.R.; Superintendent, E. A. Taffs, R.D., R.N.R.; Cashier, F. F. Revell, R.N.R.: Address, Canning Place, Liverpool.

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Missions to Seamen: President, Admiral The Hon. Sir E. R. Fremantle, G.C.B.; Secretary, Stuart C. Knox, M.A.: Address, 11, Buckingham Street, Strand, London, W.C. 2.

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National Maritime Board. *See* British Mercantile Marine.

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National Sailors' Society (Inc.): Secretary, Rev. W. Burton, D.D.: Address, 30–32, Ludgate Hill, London, E.C. 4.

Nautical Almanac Office, H.M.: Superintendent, P. H. Cowell, D.Sc., F.R.S.; Chief Assistant, B. F. Bawtree: Address, Royal Naval College, Greenwich, London, S.E. 10.

Nautical College, Pangbourne, Berkshire: Captain Superintendent, Commander A. F. G. Tracy, R.N. (retd.); Managers, Devitt and Moore's Ocean Training Ships, Ltd., 84, Leadenhall Street, London, E.C. 3.

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Newport Shipowners' Association: Chairman, Guy Treverton Jones; Secretary, J. A. Evans: Address, 86, Dock Street, Newport, Mon.

North-East Coast Engineering Trades Employers' Association: Secretary, James Cameron: Address, Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

North-East Coast Shiprepairers' Association: Secretary, James Cameron: Address, Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

North of England Protecting and Indemnity Association: Chairman, John Denholm; Vice-Chairman, J. W. Witherington; Managers, J. Stanley Todd and Frederick Miller; Assistant Manager, S. M. Todd; Telephones, Central 5221–2–3; Telegrams, "Norprindem, Newcastle": Head Office, 32, Collingwood Buildings, Newcastle-on-Tyne.

North of England Steamship Owners' Association: President, His Grace the Duke of Northumberland, K.G.; Chairman, F. Walford C. Common; Treasurer, J. T. Lunn; Secretary, William T. Todd; Telephone, Central 1270; Telegrams, "Nemesis, Newcastle-on-Tyne": Address, 20, Collingwood Buildings, Newcastle-on-Tyne.

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Seamen's National Insurance Society: Chairman of Management Committee, Sir Norman Hill, Bt.; Treasurer, H. Mead Taylor, C.B., Board of Trade Asst. Secretary for Finance; Secretary, Sidney H. Godfrey: Address, 19, Leman Street, London, E. 1.

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Sunderland Shipowners' Society: President, The Earl of Durham; Chairman, Ernest F. Dix; Secretary J. G. Rutherford: Address, 45 and 46, West Sunniside, Sunderland.

Swansea Chamber of Commerce (Inc.): President, Wm. Morgan; Chairman, W. G. Mendus; Secretary, Henry J. Marshall; Telephone, 2818; Telegrams, "Commerce, Swansea": Address, Chamber of Commerce, Swansea.

Tees and Hartlepool Shipbuilders' Association: Chairman, Herbert Taylor; Secretary, Allan Kennedy: Address, "Kinnoull," Dovecot Street, Stockton-on-Tees.

Thames Estuary and Coast Sailing Barge Mutual Insurance and Protection Association, Ltd.: Chairman, A. W. Daniels; Secretary, J. F. Plincke: Address, 49, Leadenhall Street, London, E.C. 3.

Thames Nautical Training College: Chairman, The Viscount Inchcape of Strathnaver, G.C.M.G., G.S.C.I., K.C.I.E.; Captain Superintendent, Captain M. B. Sayer, C.B.E., R.D., R.N.R.; Head Master, Inst. Capt. T. S. Green, B.A., R.N.; Secretary, F. H. Stafford: Address, 72, Mark Lane, London, E.C. 3.

Timber Trade Federation of the U.K.: President, E. Locks Lathom; Secretary, A. M. McVey; Telephone, City 1949: Address, Oxford Court, Cannon Street, E.C. 4.

Trade Facilities Act Advisory Committee: Telephone, City 3151: Address, 3, Bank Building, Princes Street, London, E.C. 4.

Trinity House, Honourable Corporation of: Master, Field-Marshal H.R.H. The Duke of Connaught, K.G.; Deputy-Master, Vice-Admiral G. R. Mansell, C.B.E., M.V.O.; Secretary, M. K. Smith, O.B.E.: Address, Tower Hill, London, E.C. 3.

Tyne Shipbuilders' Association: Secretary, James Cameron: Address, Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

United Kingdom Mutual Steamship Assurance Association, Ltd.: Chairman, Sir Walter Runciman, Bt.; Managers, T. R. Miller & Son; Telephone, Avenue 2552; Telegrams, "Mutuality, Stock, London": Address, 24, St. Mary Axe, London, E.C. 3.

United States Shipping Board Emergency Fleet Corporation, European Division: Director for Europe, Warren F. Purdy: London Address, Bush House, Aldwych, W.C. 2; Telephone, Central 7750–6.

Wear Shipbuilders' Association: Chairman, Hugh Laing; Secretary, F. J. Carlyle: Address, York Chambers, St. John Street, Sunderland.

West of England Light Shipbuilders' Association: President, F. C. Spink; Secretary, J. A. S. Hassal: Address, 6, Lord Street, Liverpool.

West of England Mutual War Risks Association, Ltd.: Managers, John Holman and Sons: Address, 1, Lloyd's Avenue, London, E.C. 3.

West of England Steamship Owners' Protection and Indemnity Association, Ltd.: Chairman, Sir John B. Wimble, K.B.E.; Vice-Chairman, Daniel Radcliffe; Managers, John Holman & Sons: Address, 1, Lloyd's Avenue, London, E.C. 3.

COLONIAL AND FOREIGN SHIPPING ASSOCIATIONS.

AUSTRALIA.

Australasian Steamship Owners' Federation: Chairman, W. T. Appleton; Secretary, H. M. Adams: Address, Steamship Buildings, 509, Collins Street, Melbourne.

Merchant Service Guild of Australasia: Secretary, W. G. Lawrence: Address, 79–81, Pitt Street, Sydney, N.S.W.

United Service Institution of New South Wales: Secretary, Lieut. Frederick Daniell: Address, 12–14, O'Connell Street, Sydney, N.S.W.

BELGIUM.

Antwerp Chamber of Commerce: Address, Local de la Bourse, Antwerp.

Antwerp Ship Repairers' Federation: Chairman, David Petrie; Secretary, Willy M. Speleers: Address, General Buildings, 14, Place de Meir, Antwerp.

Comité Maritime International: President, His Excellency Louis Franck; Secretary, F. Sohr: Address, 34, Place Verte, Antwerp.

Fédération Maritime: Address, Courte rue des Claires 2, Antwerp.

International Shipping Federation, Ltd. (Belgian Branch): General Secretary, J. F. Drory: Address, 7, Quai Van Dyck, Antwerp.

Union des Armateurs Belges: President, Léon Dens, O.B.E.; Manager, A. de Bosschere; Hon. Secretary, Emile Deckers: Address, Longue Rue Neuve 132, Antwerp.

CANADA.

American Association of Port Authorities: Address, Montreal.

Shipping Federation of Canada (Inc.): President, R. W. Reford; Manager and Secretary, Thomas Robb: Address, 218, Board of Trade Building, Montreal.

CHINA.

China Coastwise Association: Address, Hong Kong.

DENMARK.

Assuranceforeningen Skuld. (Danish Branch): Address, Amaliegade 29A, Copenhagen.

Baltic and White Sea Conference: Hon. President, Sir William J. Noble, Bart.; Manager, Jacob Olsen: Address, 29A, Amaliegade, Copenhagen, K.

Dansk Dampskibsrederiforening (Danish Steamship Owners' Association): President, A. O. Andersen; Managing Director, E. Maegaard: Address, Amaliegade 29A, Copenhagen.

International Shipping Federation, Ltd. (Danish Branch): General Secretary, A. O. Andersen: Address, Amaliegade 29A, Copenhagen.

FRANCE.

Bureau des Longitudes (Publishers of the French Nautical Almanac): Address, Palais de l'Institut, 3, Rue Mazarine, Paris.

Bureau Veritas: President, C. J. Lefebvre; Managing Director, A. Berlhe de Berlhe; General Secretary, A. F. Bertrand: Address, 31, Rue d'Offémont, Paris.

Comité Central des Armateurs de France : Chairman, J. Dal Piez ; General Secretary, Paul de Rousiers : Address, 73, Boulevard Haussmann, Paris (8^e).
Compagnie Universelle du Canal Maritime de Suez : Address, 1, rue d'Astorg, Paris (8^e).

GERMANY.

Bremer Reederverein : Address, Haus Schütting, Bremen.
Germanischer Lloyd : Chairman, Prof. Carl Pagel : Address, Alsenstrasse 12, Berlin, N.W. 40.
International Shipping Federation, Ltd., The, (German Branch) ; General Secretary, Dr. Paul Ehlers : Address, Adolphsbrücke 9, Hamburg.
Reederverein für den Bezirk der Handelskammer zu Flensburg : Address, Flensburg.
Reedereiverein zu Lübeck : Address, Breitestrasse 6, Lübeck.
Rostocker Reederverein : Address, Rostock.
Schutzverein Deutscher Reeder (Protection Association of German Shipowners) : Chairman, H. M. Gehrekens ; Manager, J. L. Bartelsen : Address, Alsterstrasse 1, Hamburg 1.
Verband Deutscher Reeder : President, Staatsminister a. D. Graf. von Rhoedern ; General Manager, Dr. iur. Hans Rehmke : Address, Beim Alten Rathaus, Patriotisches, Gebaude, VI Stock, Hamburg II.
Verein Hamburger Reeder : Address, Mönckebergstrasse 27 II, Hamburg.
Verein Stettiner Reeder : Address, Börse, Stettin.

HOLLAND.

Bond van Werkgevers in de Koopvaardy (Union of Employers in the Merchant Marine) : Address, Rotterdam.
Centrale van Koopvardy-officierin (Central Union of Merchant Marine Officers) : Address, Rotterdam.
International Shipping Federation, Ltd. (Dutch Branch) : Secretary, J. Stakenburg : Address, Parklaan 8, Rotterdam.
Nederlandsche Reedersvereeniging : President, J. B. van der Houven van Oordt ; Secretary, J. C. P. Krayenhoff van de Leur ; Assistant Secretary, Dr. F. W. A. de Kock van Leeuwen : Address, Stationsweg 135, The Hague.
Scheepvaart Vereeniging "Nord" ("North" Shipping Association) : Address, Amsterdam.
Scheepvaart Vereeniging "Zuid" ("South" Shipping Association) : Address, Rotterdam.

INDIA.

United Service Institution of India : Address, Simla.

ITALY.

Federazione Armatori Italiani : Secretaries, Comm. C. Trucco and Avv. G. V. Perosio : Address, Via XX Septembre 19–4, Genca.
Federazione degli Armatori Liberi Italiani : President, Avv. G. B. Becchi ; Secretary, Avv. Carlo Raimondo : Address, Salita S. Caterina 4, Genoa (6).
Registro Italiano : President, Gr. Uff. Prof. Camillo Supino ; Director, Comm. Ing. D. Barricelli ; Secretary, Ing. C. Doerfles : Address, Piazza della Borsa 7, Trieste.

JAPAN.

Japanese Merchant Marine Officers' and Engineers' Association ; Secretary, Yojiro Tsudzuki : Address, No. 180, 8 Chome, Shimoyamate—Dori, Kobe.
Nippon Shipowners' Association : President, Y. Ito ; Managing Director, Z. Kamiya : Address, 32, Akashi Machi, Kobe.
Teikoku Kaiji Kyokai (Imperial Japanese Marine Corporation) : Chairman, Baron G. Shiba ; Secretary, S. Shinohara : Address, 444, Kaijo Building, Marunuochi, Tokio.

NORWAY.

Assuranceforeningen Skuld.: President, Otto Thoresen; Managing Directors, Sir Anton Poulsson, K.B.E., and Einar Poulsson: Address, Carl Johansgate 1, Postbox 129, Oslo.
Det Norske Veritas: Chairman, Sir Anton Poulsson, K.B.E., Secretary, N. Hagness: Address, P.O. Box 82, Oslo.
Nordisk Skibsrederforening: President, A. F. Klaveness; Managing Director, J. Jantzen: Address, Drammensveien 21, Oslo.
Norges Rederforbund: President, H. Westfal-Larsen; Secretary, W. Klaveness, C.B.E.: Address, Stortingsgaten 16, Oslo.
Skibsbyggerienes Landsforening: Address, Schestedsgt 3 Oslo.

SPAIN.

"Almanaque Nautico" (The Spanish Nautical Almanac). *See* Observatorio de Marina.
Asociaciòn de Navieros de Bilbao: President, Sir Ramón de la Sota, K.B.E.; Secretary, Don Antonio Arroyo: Address, Ibañez de Bilbao 22, Bilbao.
Observatorio de Marina (Publishers of the Spanish "Almanaque Nautico"); Director, Señor Leon Herrero: Address, San Fernando, Cadiz.

SWEDEN.

International Shipping Federation, Ltd. (Swedish Branch): General Secretary, O. A. Nordborg: Address, Sveriges Redareförening, Kungsportsavenyen 1, Gothenburg.
Svenska Teknologföreningen adv. för Skeppsbyggnadskonst (Association of Swedish Engineers and Architects—Section for Naval Architecture): Address, Stockholm 16.
Sveriges Allmänna Sjöfartsförening (Swedish General Shipping Association): President, Hans Ericson; Secretary, C. E. Landberg: Address, Hantverkargatan 32, Stockholm.
Sveriges Angfartygs Assurans Förening: Address, Gothenburg.
Sveriges Redareförening (Swedish Shipowners' Association): President, Gunnar Carlsson; Managing Director, O. A. Nordborg: Address, Kungsportsavenyen 1, Gothenburg.
Sveriges Segelfartygsförening: Address, Ombudsmannen, Raa pr. Raus.

UNITED STATES.

American Association of Port Authorities: President, J. Spencer Smith; Secretary, Tiley S. McChesney: Address, Room 200, New Orleans Court Building, New Orleans, Louisiana.
American Bureau of Shipping: President, Stevenson Taylor; Secretary, J. W. Cantillion: Address, 50, Broad Street, New York.
American Manufacturers' Export Association: Secretary, M. B. Dean: Address, 160, Broadway, New York City.
American Marine Association: President, Colonel E. A. Simmons; Secretary, K. Warren Heinrich: Address, 15, Park Row, New York, N.Y.
American Steamship Owners' Association: President, Alfred Gilbert Smith; Vice-President, Paul H. Harwood: Address, 11, Broadway, New York.
American Steamship Owners' Mutual Protection and Indemnity Association (Inc.): Chairman, Alfred Gilbert Smith; Secretary, J. H. de G. Evans: Address, 3, South William Street, New York, N.Y.
Maritime Association of the Boston Chamber of Commerce: Chairman, Edward E. Blodgett; Manager, Frank S. Davis: Address, 177, Milk Street, Boston 9, Mass.
Master Boiler Makers' Association: Secretary, H. D. Vought: Address, 26, Cortlandt Street, New York City.
National Association of Engine and Boat Manufacturers: Secretary, R. R. Hand: Address, 29, West 39th Street, New York.
National Merchant Marine Association: President, Hon. Joseph E. Ransdell; Secretary, Mr. Henry C. Wiltbank: Address, Munsey Building, Washington, D.C.

National Rivers and Harbours Congress: Secretary, S. A. Thompson: Address, 824, Colorado Building, Washington, D.C.

Nautical Almanac: Director of the Almanac, Captain W. S. Eichelberger (Math), U.S.N.: Address, United States Naval Observatory, Washington, D.C.

Pacific American Steamship Association: President, Captain Robert Dollar; Secretary, J. P. Williams: Address, 336, Battery Street, San Francisco, California.

Port of New York Authority: Secretary, Wm. Leary: Address, 11, Broadway, New York.

Shipowners' Association of the Pacific Coast: President, F. J. O'Connor: Secretary, Nat Levin: Address, 336, Battery Street, San Francisco, California.

United States Shipping Board Emergency Fleet Corporation: Address, Washington, D.C.

THE STEAMSHIP SERVICES OF THE WORLD.

All lines run return journeys in reverse order to services given, except where otherwise stated.

AFRICA, EAST.

British India Line; from London and Middlesbrough to Principal Ports of East Africa (*passengers and cargo*); from Bombay to Mombasa, Zanzibar, Dar-es-Salaam, Beira, Delagoa Bay (*mails, passengers and cargo*).
Clan Line; from Glasgow, Liverpool and Newport to Natal, Delagoa Bay, Beira, Mauritius, Madagascar (*cargo*).
Compagnie Havraise Péninsulaire de Navigation à Vapeur; from Havre and Marseilles to Madagascar (East Coast), Réunion and Maurice Isle (*passengers and cargo*); from Havre, Bordeaux, and Marseilles to Madagascar (West Coast) and Mozambique (*passengers and cargo*).
Deutsche Ost-Afrika Linie; from Hamburg, Antwerp, and Southampton to Chief East African Ports (*passengers and cargo*).
Hall Line; from Glasgow and Liverpool to all East African Ports (*passengers and cargo*).
Hamburg-Amerika Linie Africa-Dienst; from Hamburg, Antwerp, and Southampton to Chief Ports of East Africa (*passengers and cargo*).
Hamburg-Bremer-Afrika Linie A.G.; from Hamburg, Antwerp, and Southampton to Chief East African Ports (*passengers and cargo*).
Harrison Line; from Glasgow and Birkenhead to Principal Ports of East Africa (*cargo*).
Holland Africa Line; (Combined Service) to all Principal Ports (*cargo and passengers, limited*).
Houlder Brothers and Co., Ltd.; from London to Chief East African Ports (*passengers and cargo*).
Houston Line; from Continent, Middlesbrough, London, Glasgow, Liverpool, and United States to Chief East African Ports (*cargo*).
Prince Line; from New York to Delagoa Bay, Beira, etc. (*cargo*) (*viâ* Cape).
Prince Line; from New York to East African Ports, and vice versâ (*cargo*).
Union-Castle Line; from Southampton to Madeira, Capetown, Port Elizabeth, East London and Natal (without transhipment); also for Delagoa Bay and Beira (*passengers, mails, and cargo*).
Woermann-Linie, Aktien-Gesellschaft; from Hamburg, Antwerp, and Southampton to Chief East African Ports (*passengers and cargo*).

AFRICA, SOUTH.

Aberdeen Line; from Liverpool to Cape Town (*passengers only*) to South Africa.
Blue Funnel Line. *See* Holt and Co., Alfred, Liverpool.
British India Line; from Bombay to Durban (*passengers, mails, and cargo*).
Clan Line; from Glasgow, Liverpool and Newport to Cape Town, Algoa Bay, East London and Durban (*cargo*).
Deutsche Ost-Afrika Linie; from Hamburg, Rotterdam, and Southampton to Chief South African Ports (*passengers and cargo*).
Ellerman and Bucknall Steamship Co., Ltd.; from United Kingdom (*weekly cargo services, also regular passenger service*); from Australia (*fortnightly cargo sailings*); from New York (*joint weekly cargo sailings*).
Furness, Withy and Co., Ltd. *See* Prince Line.
Hall Line; from Glasgow and Liverpool to Cape Town, Mossel Bay, Algoa Bay, East London, Natal, Delagoa Bay, and Mauritius (*cargo*).
Hamburg-Amerika Linie Africa-Dienst; from Hamburg, Rotterdam, and Southampton to South African Ports (*cargo and passengers*).
Hamburg-Amerika Linie (Afrika-Dienst); from Hamburg, Antwerp and Southampton to Chief West African Ports (*passengers and cargo*).

Hamburg-Bremer-Afrika Linie A.G.; from Hamburg, Bremer, Rotterdam, and Southampton to Chief South African Ports (*passengers and cargo*).
Harrison Line; from Birkenhead, Glasgow, and Newport to Capetown, Mossel Bay, Algoa Bay, East London, Natal, Delagoa Bay, Beira, and Mauritius (*cargo*).
Harrison Line; London and Middlesbrough to Natal, Delagoa Bay, and Beira.
Holland Africa Line; from Hamburg, Antwerp, Amsterdam, Rotterdam, to all Principal Ports (*cargo and passengers, limited*).
Holt and Co., Alfred, Liverpool; from Liverpool to Cape Town (*passengers*); homewards from Durban and Cape Town to Liverpool and Glasgow (*passengers and cargo*).
Houlder Brothers and Co., Ltd.; from London to Cape Town, Port Elizabeth, East London, Durban, Delagoa Bay and Beira (*passengers and cargo*).
Houston Lines; from United Kingdom and from United States (*both cargo services, carrying a few passengers*).
Natal Line of Steamers, Bullard, King & Co., Ltd.; from London, Middlesbro' and Continent to South Africa; also service between Calcutta, Rangoon and Colombo and South and East African Ports (*passengers and cargo*).
Peninsular and Oriental Service to Australia; from London to Adelaide, Melbourne, and Sydney *viâ* Cape Town (*passengers, one class only, mails and cargo*).
Prince Line; from New York to South African Ports, and vice versâ (*cargo*).
Shaw, Savill and Albion Co., Ltd.; from London to Australia, *viâ* the Cape of Good Hope (outwards, *general cargo;* homewards, *a large amount of meat and dairy produce in cold storage*).
Union-Castle Line; from London and Plymouth to Canary Islands, Cape Town, Mossel Bay, Port Elizabeth, East London, Natal, Delagoa Bay and Beira (without transhipment); also for Inhambane, Chinde, Quelimane, Macuse, Moma and Angoche (*passengers, mails, and cargo*).
Wilh. Wilhelmsen; from Norway, Sweden, Denmark, and Finland, to chief South African Ports (*cargo*).
White Star Line; from Liverpool to Australia, calling at Cape Town (*passengers and cargo*).
Woermann-Linie, Aktien Gesellschaft; from Hamburg, Rotterdam, and Southampton to Chief South African Ports (*passengers and cargo*).

AFRICA, WEST.

African Steamship Co.; from Liverpool and London to principal West African Ports (*passengers and cargo*).
British and African Steam Navigation Co., Ltd.; from Liverpool and Rotterdam to principal West African Ports (*passengers and cargo*).
Deutsche Ost-Afrika Linie; from Hamburg, Rotterdam, Antwerp, and Southampton to Chief West African Ports (*passengers and cargo*).
Elder Dempster and Co., Ltd.; from Liverpool, London, Hamburg, Rotterdam, Antwerp, New York, Montreal (ships load homewards to Montreal if inducement offers) to West African Ports; also West African Ports to Hull (*passengers and cargo*).
Hamburg-Bremer-Afrika Linie A.G.; from Hamburg, Rotterdam, Antwerp, and Southampton to Chief West African Ports (*passengers and cargo*).
Holland West Africa Line; from Hamburg, Amsterdam, Bordeaux, Antwerp with Trans to Principal Ports (*cargo and passengers, limited*).
Houston Lines; from London, Glasgow, and Liverpool (*cargo*).
Union-Castle Line; from London to Lobito Bay, Walfish Bay, and Luderitz Bay; Port Elizabeth, East London and Natal to Mauritius.

AMERICA, CENTRAL.

Canadian Government Merchant Marine, Ltd.; Montreal to Nassau, Kingston (Ja.) Jamaica and Belsize (B.H.) (*passengers and cargo*); Montreal to Barbados, Trinidad, and British Guiana (*cargo*). During the winter these services operate from Halifax, N.S.
Canadian Government Merchant Marine, Ltd.; St. John (N.B.) and Halifax (N.S.) to Bermuda, St. Kitts, Antigua, Montserrat, Dominica, St. Lucia, Barbados, St. Vincent, Grenada, Trinidad and Demerara (*cargo*).
Clyde Steamship Co.; from New York to Santo Domingo City and Azua, *viâ* Turks Island, calling at Monte Cristo, Puerto Plata, Samana, Sanchez, La Romana, and Macoris (*passengers and cargo*).

Compagnie Générale Transatlantique; Havre to Central American Ports (*cargo*).
Cuban Line (Ernest Bigland and Co., Ltd., Managers); from Antwerp, Hull, and London to Cuba and Mexico (*cargo and few passengers*).
Elders and Fyffes, Ltd.; from Avonmouth, Garston, and Rotterdam to Bermuda, Jamaica, Barbadoes, Trinidad, St. Simon, Panama, Spanish Honduras, and Colombia (*passengers only*).
Ellerman and Buknall Steamship Co., Ltd.: Calcutta, and Rangoon to West Indies and Cuba (*regular joint service*).
Furness Line; from New York to Bermuda (*passengers and cargo*); New York to West Indies (*passengers and cargo*); from New York to Grenada, Trinidad and Demerara (*passengers and cargo*); from Glasgow and Manchester to Colon and Balboa, proceeding thence to Los Angeles, San Francisco, Victoria and Vancouver (*passengers and cargo*).
Furness, Withy and Co., Ltd. *See* Furness Line.
Holland America Line; from Antwerp, Rotterdam to Havana, Vera Cruz, Tampico and Orleans.
Hamburg-Amerika Line; from Hamburg to Cuba and Mexico (*passengers and cargo*); from Hamburg to Cuba (*freight*); from Hamburg to West Indies (*passengers and cargo*); from Hamburg to West Coast Ports and Mexico, *viâ* Panama (*passengers and cargo*); from Hamburg to the West Indies Islands (three-weekly).
Harrison Line; from Glasgow to West Indies and Demerara (*cargo*); from London to West Indies and Demerara (*passengers and cargo*); from Swansea, Glasgow, and Liverpool to North Pacific Ports, *viâ* Panama Canal (*cargo*); from Liverpool to West Indies and Mexico (*cargo*).
Holt and Co., Alfred, Liverpool; from Boston and New York to the Straits Settlements, Philippines, China, Japan, Korea, Siberia, Pacific Coast *viâ* Panama (*cargo*).
Houston Lines; from River Plate Ports to United States and Canada, calling at Cuba (*cargo service, carrying a few passengers*).
Hugo Stinnes Linien; from Hamburg to Cuba and Mexico (*passengers and cargo*).
Koninklijke West-Indische Maildienst; from Hamburg, Antwerp, Rotterdam, Amsterdam to all Principal Ports in Central America, and West Coast of South-America (*passengers and cargo*).
Larrinaga Line; from Liverpool to Havanna and other Cuban Ports; from Houston and Galveston to Liverpool and Manchester.
Leyland Line; from Liverpool, London, and Manchester to Panama (*passengers and cargo*).
New York and Porto Rico Steamship Co. *See* Porto Rico Line.
New Zealand Shipping Co., Ltd.; from London and Liverpool through the Panama Canal to New Zealand and Australia (*passengers and cargo*).
Nourse Line; from Calcutta to Cuba, P. & O.
Panama Rail Road Steamship Co.; from New York, Port au Prince (Hayti), to Cristobal (Canal Zone, Panama) (*passengers and cargo*).
Porto Rico Line; from New York to San Juan, Ponce, Mayaguez, Arroyo, Aguadilla, Arecibo, etc. (*freight and passengers*); from New Orleans and Mobile to San Juan, Ponce, and Mayaguez, Arroyo, Aguadilla, Arecibo, etc. (*freight*).
Roland-Linie, Aktien Gesellschaft; from Hamburg, Bremen and Antwerp to West Indies and Central America.
Royal Mail Steam Packet Co.; from London and Hull to Bermuda, Nassau, Santiago de Cuba, Jamaica, Haiti and San Domingo; from Rotterdam, Antwerp and London to Puerto Colombia, Colon and Central American Pacific Ports (*passengers and cargo*); from Colon and Central American Pacific Ports to Glasgow, Liverpool, Southampton, London, Hamburg, Rotterdam, Antwerp; from St. John, N.B., and Halifax, N.S., to Bermuda, West Indies, and Demerara (*passengers, mails and cargo*).
Shaw, Savill and Albion Co., Ltd.; from London through the Panama Canal to New Zealand, returning by same route (*passengers and cargo*).
Stinnes Linien. *See* Hugo Stinnes Linien.
Wilh. Wilhelmsen; from Norway, Sweden, Denmark, and Finland to Cuba, Vera Cruz, and Tampico (*cargo and a few passengers*).
White Star Line, jointly with Shaw, Savill and Albion Co., Ltd.; from London to New Zealand *viâ* Panama Canal (*passengers and cargo*).

AMERICA, SOUTH.

"Artus" Line. *See* Hugo Stinnes Linien.
Booker Line; from Liverpool to Demerara (British Guiana) direct (*passengers and cargo*).

Booth Line; from Antwerp, Hamburg, Havre, Liverpool, Lisbon, London, Madeira and Oporto to principal North Brazilian Ports, and Iquitos, Peru; also from New York to all principal Brazilian Ports (*passengers and cargo*).

British and Argentine Steam Navigation Co., Ltd.; from Liverpool to River Plate Ports (*passengers and cargo*).

Compagnie Générale Transatlantique to Pacific Coast Ports (*cargo*).

Compania Naviera Sota y Aznar (Spanish Line); from Hamburg, Rotterdam, Antwerp and Bilboa to Rio de Janeiro, Santos, Monte Video and Buenos Aires (*cargo*); also Glasgow, Liverpool and Swansea to Spanish Ports (*cargo*) (outwards only).

Cornborough Shipping Line, Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Davies Steamship Co., W. R.; from Liverpool to principal South American Ports (*cargo*).

Donaldson South American Line; from Glasgow, Liverpool, and London to Monte Video and Buenos Aires—also by transhipment to other River Plate Ports (*refrigerated cargo*).

Furness-Houlder Argentine Lines, Ltd.; from London and Liverpool to chief Ports of Argentine and Uruguay (*refrigerated cargo and a few first-class passengers*).

Furness, Withy and Co., Ltd. *See* Furness Line, Prince Line, and Furness-Houlder Argentine Lines.

Grace Lines; from New Orleans to Ports of Equador, Peru, and Chile (*passengers, cargo, and mails*).

Hall Line; from Calcutta to River Plate Ports (*cargo*).

Hamburg-Amerika Line; from Hamburg to Brazil and La Plata Ports (*passengers and cargo*); from Hamburg to West Coast Ports of South America (*viâ* Magellan, fortnightly; *viâ* Panama, every ten days).

Hamburg-Südamerikanische Dampfschifffahrts-Gesellschaft; from Hamburg to Brazil, Uruguay, and Argentina (*passengers, cargoes and mails*).

Harrison Line; Liverpool and South Wales to Brazil (*cargo*).

Henderson and Co., Ltd.; from Glasgow to principal South American Ports (*cargo*).

Holland and Co., Ltd., Arthur; from Newport to principal South American Ports (*cargo*).

Houlder Brothers and Co., Ltd.; from Antwerp, London, Liverpool, and Bristol Channel to Monte Video, Buenos Aires, and Rosario (Outwards, *general cargo and passengers*; Homewards, *frozen meat, chilled meat, dairy produce, and general cargo; and passengers*).

Houston Lines; from Glasgow and Liverpool to River Plate; from United States to River Plate; from Canada to River Plate; from West Indies to River Plate (*all cargo services, carrying a few passengers*).

Hugo Stinnes Linien; from Hamburg to Portuguese Ports, Pernambuco, Monte Video, Buenos Aires, and Rosario (in association with the "Artus" Line, Danzig) (*passengers and cargo*).

Kaye, Son and Co., Ltd.; from Liverpool to principal South American Ports (*cargo*).

Koninklijke Hollandsche Lloyd; from Amsterdam to Buenos Aires, calling *en route* at Southampton, Cherbourg, La Corunna, Vigo, Leixoes, Lisbon, Las Palmas, Pernambuco, Bahia, Rio de Janeiro, Santos, and Monte Video (*passengers, mails, and freights*); from Hamburg *viâ* Rotterdam, Antwerp, Spain to Argentina (*cargo*); from Hamburg to Amsterdam, Antwerp, Portugal to Brazil (*cargo*).

Lamport and Holt; from Liverpool, Glasgow, and Manchester to Brazil, *viâ* Portugal; from Liverpool and Glasgow to the River Plate, *viâ* Spain; from Middlesbrough, Hamburg, Antwerp, London, and Cardiff to Brazil and the River Plate; from New York to North Brazil; from New York to Central and South Brazil; from New York to River Plate Ports; from New Orleans to Brazil and River Plate; from Glasgow, Liverpool, and Havre to the West Coast Ports of South America (*cargo*); from New York to Brazil and the River Plate, calling at the West Indies (*passengers*).

Leeds Shipping Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

MacIver Line; from Liverpool to principal River Plate Ports without transhipment (*cargo*).

Nelson, Ltd., H. and W.; from London to Buenos Aires, calling on the outward journey at Boulogne, Corunna, Vigo, Las Palmas, G.C., Rio de Janeiro, and Monte Video, and on the homeward journey at Monte Video and Las Palmas; from Liverpool to Buenos Aires, calling at Monte Video, and at Las Palmas on the homeward voyage (*cargo, passengers, and mails*).

Oakwin Steam Ship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Prince Line, Ltd.; from Middlesbrough, Antwerp and London to River Plate Ports (*cargo*), and vice versâ; from New York to River Plate Ports (*cargo*); from New York to Brazil (*cargo*), and vice versâ; from Brazil to New Orleans.

Ritson, F. and W.; from Glasgow, Liverpool, and London to principal West Coast South American Ports (*cargo*).

Roland-Linie, Aktien Gesellschaft; from Bremen and Hamburg to Chile, Peru, and Ecuador (*passengers and cargo*).

Rotterdam South America Line; Koninklijke Hollandsche Lloyd (joint service); from Hamburg, Antwerp, Amsterdam, Rotterdam to all Principal Ports in South Amarica (*cargo "A" boats passengers*).

Rotterdam-Zuid Amerika Lijn; from Hamburg, Rotterdam, and Antwerp to Buenos Aires, Monte Video, Santos, Rio de Janeiro, Bahia, and Pernambuco, calling at Bilbao, Santander, and Vigo (*cargo, carrying a few passengers*).

Royal Mail Steam Packet Co.; from Southampton to Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires (*mails, passengers, and cargo*); from Liverpool to Rio de Janeiro, Santos, and Buenos Aires, calling at Cherbourg, Coruna, Leixoes, and Lisbon (*mails, passengers and cargo*); from London, Newport, and Swansea to Pernambuco, Maceio, Bahia, Rio de Janeiro, Santos, Rio Grande do Sul and Paranagua (*cargo only*); from Brazil to Havre, Antwerp, Rotterdam, Hamburg and Liverpool.

St. Just Steamship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Shaw, Savill and Albion Co., Ltd.; from London to New Zealand, proceeding on the outward journey *viâ* the Panama Canal, and on the homeward journey *viâ* Cape Horn, calling at Monte Video and Teneriffe (*cargo, and meat and dairy produce in cold storage on homeward voyage*).

Sota y Aznar; from Hamburg, Rotterdam, Antwerp, and Bilbao to Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires (*cargo*), and reverse.

Stinnes Linien. *See* Hugo Stinnes Linien.

Toyo Kisen Kaisha; from Hong Kong, Moji, Kobe, Yokohama, Honolulu, and Hilo to San Francisco, Portland, Los Angeles, Salina Cruz, Balbao, Callao, Mollendo, Arica, Iquique, and Valparaiso (*passengers and mails*).

Wilh. Wilhelmsen (Wilhelmsen Steamship Line); from New York to Brazil and River Plate Ports (*cargo and refrigerated stores—fortnightly*).

AUSTRALIA AND NEW ZEALAND.

Aberdeen Line; from Liverpool to Albany, Adelaide, Melbourne, Sydney and Brisbane; calling at Teneriffe and Cape Town (outward), and Fremantle, Durban, Cape Town and Teneriffe (homeward) (*passengers and cargo*).

Adelaide Steamship Co., Ltd.; between Queensland Ports, Sydney, Newcastle, Melbourne, Adelaide, Albany, and Fremantle (*cargo and stock*); between Port Adelaide, Spencer's Gulf, and West Coast Ports (*passengers, cargo, and stock*).

Anderson, Green and Co., Ltd. *See* Orient Line.

Australian Commonwealth Line of Steamers; from London to Fremantle, Adelaide, Melbourne, Sydney, and Brisbane *viâ* Port Said and Colombo (*passengers and cargo*); from United Kingdom Ports to Fremantle, Adelaide, Melbourne, Sydney and Brisbane *viâ* Suez Canal (*cargo*).

Australian Steamships Pty., Ltd.; between Melbourne, Sydney, Newcastle, Brisbane, Queensland Ports, Adelaide, and other South Australian Ports, Albany, Fremantle, Geraldton, and West Australian Ports, Geelong, Portarlington, Warrnambool, Portland, etc. (*passengers and cargo*).

Blue Funnel Line. *See* Holt and Co., Alfred.

British India Line; from London to Fremantle, Adelaide, Melbourne, Sydney, and Brisbane; from Gulf of Mexico to Australian and New Zealand Ports, from Calcutta to Australian Ports (*passengers and cargo*).

Burns, Philp and Co., Ltd.; between Sydney, Queensland Ports, Darwin, Java, and Singapore; between Sydney, Lord Howe Island, Norfolk Island, and New Hebrides; between Sydney, Brisbane, Solomon Islands, and New Britain; between Sydney, Queensland, Papua, and Rabaul; between Sydney and New Britain direct (*mails, passengers, and cargo*).

Canadian-Australian Line. *See* Canadian Pacific Railway Co.

Canadian Government Merchant Marine, Ltd.; from Vancouver (*cargo*); from Montreal (*cargo*). During the winter months this service operates from Halifax, N.S.

Canadian Pacific Railway Co., in conjunction with the Canadian-Australian Line; from Vancouver to Honolulu, Suva, Fiji, Auckland, N.Z., and Sydney, Australia (*passengers and cargo*).

Commonwealth and Dominion Line, Ltd.; from London, also Glasgow and Liverpool, to Auckland, Wellington, Lyttleton and Port Chalmers and/or Dunedin, N.Z., *viâ* the Panama Canal.

Commonwealth and Dominion Line; from London, Middlesbrough, Hull, Antwerp and Hamburg to Melbourne, Sydney, Newcastle, N.S.W., Brisbane, Hobart and Launceston *viâ* the Cape of Good Hope.

Commonwealth and Dominion Line; from New York to Australia and New Zealand *viâ* the Panama Canal; Homewards from Australia and New Zealand to United Kingdom and Continent (*cargo and passengers*).

Cornborough Shipping Line, Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Cunard Line; from Southampton, Liverpool, Belfast, Glasgow, Queenstown, Cherbourg, Havre and Hamburg *viâ* U.S.A. or Canada to all the chief Ports of Australia and New Zealand (*passengers*).

Eastern and Australian Steamship Co., Ltd.; Melbourne, Sydney, Brisbane and Queensland Ports to Borneo, Manila, Hongkong and Japanese Ports (*passengers and cargo*).

Ellerman and Bucknall Steamship Co., Ltd.; to London, United Kingdom and Continent, also United States (*regular cargo services*); from New York (*frequent* (*joint cargo services*).

Federal Steam Navigation Co., Ltd.; from London and West Coast Ports of Great Britain to Principal Ports of Australia (*passengers and cargo*).

Hall Line; from Liverpool to principal Australian Ports (*passengers and cargo*).

Henderson and Co., Ltd.; from Glasgow and Liverpool to principal Australian Ports (*cargo*).

Holt and Co., Alfred; from Glasgow and Liverpool and from Hamburg, Bremen, Rotterdam and Antwerp to Western Australia, Adelaide, Melbourne, Sydney and Brisbane; from Singapore to West Australian Ports (*passengers and cargo*).

Leeds Shipping Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Liverpool Line to Australia; from Liverpool to Fremantle, Adelaide, Melbourne, Sydney, Newcastle, Brisbane, Auckland, Wellington, Lyttelton and Dunedin; from Manchester to same ports (*passengers and cargo*). Marwood and Robertson, 33, Brazennose Street, Manchester, and 18, Water Street, Liverpool.

London Line; from Bristol, Glasgow, Liverpool, and London to principal Australian Ports (*passengers and cargo*).

McIlwraith, McEacharn's Line; from Sydney to Melbourne, Adelaide, Albany, and Fremantle (*passengers and cargo*).

New Zealand Shipping Co., Ltd., from London and West Coast ports of Great Britain, *viâ* the Panama Canal, to principal Australian and New Zealand Ports (*mails, passengers, and cargo*).

Oakwin Steamship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Orient Line to Australia; from Tilbury to Fremantle, Adelaide, Melbourne, Sydney, and Brisbane, calling at Gibraltar, Toulon, Naples, Port Said, and Colombo, also on the return journey at Plymouth. At certain seasons of the year the vessels call at Hobart, Tasmania (*passengers, cargo, and mails for Commonwealth of Australia*).

Peninsular and Oriental Service to Australia; from London to Adelaide, Melbourne, and Sydney, *viâ* Cape Town (*passengers—one class only—mails and cargo*).

Peninsular and Oriental Steam Navigation Company; fortnightly service from London to Fremantle, Adelaide, Melbourne, and Sydney, calling at Gibraltar, Marseilles and Port Said, or Port Said and Port Sudan, Aden, and Colombo, and homewards also at Plymouth (*passengers, mails, and cargo*).

St. Just Steamship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Shaw, Savill and Albion Co.; from Glasgow and Liverpool to Port Chalmers *viâ* Panama Canal, calling at Auckland, Wellington, and Lyttleton (*passengers, mails, and cargo*); from London to New Zealand, proceeding *viâ* the Panama Canal, and on the return journey *viâ* Cape Horn, calling at Monte Video and Teneriffe en route (*cargo*).

Shire Line; from Glasgow to principal Australian Ports (*cargo*).

Trinder, Anderson and Co.; from London to principal Australian Ports (*cargo*).

Turnbull, Martin and Co.; from London and West Ports of Great Britain to principal Australian and New Zealand Ports (*passengers and cargo*).

White Star Line; from Liverpool to Sydney, calling at Cape Town, Albany, Adelaide, and Melbourne (*passengers and cargo*); from Liverpool to Australia, direct (*cargo*); from Liverpool to New Zealand, direct (*cargo*), jointly with Shaw, Savill and Albion Co., Ltd.; from London to Port Chalmers *viâ* the Panama Canal, calling at Auckland, Wellington, and Lyttleton (*passengers, mails, and cargo*).

Wilh. Wilhelmsen: from Norway, Sweden, Denmark, Finland, Hamburg, and Antwerp to principal Australian Ports (*cargo*).

BALTIC AND NORTH SEA.

American-Hawaiian Steamship Co.; from Los Angeles, Portland, San Francisco, Seattle, and Tacoma to Hamburg, calling at Glasgow, Havre, Liverpool, and London (*fortnightly cargo sailings*).

Bachke and Co.; from Hull, Trondhjem and West Norwegian Ports to Aberdeen, Grangemouth, Hull, Grimsby, London, Manchester, Bristol, Swansea, Bremen, Antwerp and French Ports (*cargo*).

Becker and Co., Ltd.; from East and West Coast Ports of the United Kingdom to principal Baltic Ports (*passengers and cargo*).

Bergenske Dampskibsselskab, Det.; from Glasgow, Manchester, Middlesbrough and Newcastle to Principal Ports of Norway and Sweden (*passengers and cargo*).

Bergenske Dampskibsselskab, Det. (B. & N. Line); from Newcastle to Bergen four times weekly (summer), three times weekly (winter). Quickest route Scandinavia—England (*passengers and cargo*). Cargo steamers from London, Glasgow, Manchester, Middlesbrough, etc., to Principal Ports of Norway, regularly. Regular steamers Rotterdam—Bergen, Hamburg—Bergen, weekly. Bergen—Farö Islands and Iceland, fortnightly. Express Coastal steamers Bergen—Kirkenes (*passengers and cargo*).

Brodin, Erik; from London to Principal Ports of Norway and Sweden (*passengers and cargo*).

Burton, Smart and Orford, Ltd. *See* Scandia Lines.

Cook and Son, John; East Norway to Aberdeen, Dundee and Granton (*cargo*).

Cormack and Co., James; from Aberdeen, Dundee, Grangemouth, Leith, Montrose, and Methil to Riga, Windau and other Latvian Ports; occasional steamers to Archangel (*cargo and few passengers*).

Compagnie Générale Transatlantique: Havre to Memel and Dantzig (*passengers and cargo*).

Cornborough Shipping Line, Ltd. *See* Smith and Sons, Ltd., Sir Wm Reardon.

Currie Line. *See* Leith, Hull and Hamburg Steam Packet Co.

Ellerman's Wilson Line; from Grimsby, Hull, Liverpool, London, Newcastle and Swansea to Principal Ports of Baltic, Norway, and Sweden.

Finland Line; from Liverpool to Helsingfors (*cargo*).

Finland Steamship Co., Ltd. *See* Finska Ångfartygs Aktiebolaget.

Finska Ångfartygs Aktiebolaget; from Hull to Copenhagen and Finnish Ports (*passengers and cargo*); from Antwerp to Finnish Ports (*passengers and cargo*); from Stettin and Lübeck to Helsingfors and Finnish Ports (*passengers and cargo*); from Stockholm to Helsingfors and Abo (*passengers and cargo*); from Dantzig, Riga and Reval to Helsingfors or Hangö (*passengers and cargo*). The foregoing lines carry mails for Germany, Sweden, and Esthonia. From Hull, London, Liverpool, and Manchester, Leith, Grangemouth to Finnish Ports (*cargo*); from Rotterdam, Antwerp, Northern France, and Copenhagen to Finnish Ports (*cargo*). From Marseille, Geneva and Spanish Ports to Finnish Ports (*cargo*). From Lubeck to Finnish Ports (*cargo*).

Forenede Dampskibsselskab., Det.; from Hull, London, Manchester, Swansea, Liverpool, Newcastle, Leith, Grimsby and Harwich to Ports of Scandinavia (*passengers and cargo*).

Glen and Co.; from Glasgow to Holland and Belgium (*cargo*).

Head Line and Lord Line; to Belfast and Dublin, from Petrograd, Reval, Pernau, and Riga (*chiefly cargo*); between Belfast, Dublin, Cork, Londonderry and Hamburg, Amsterdam, Antwerp, Rotterdam and Ghent and Bremen (*chiefly cargo*).

Leeds Shipping Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Leith Hull and Hamburg Steam Packet Co., Ltd.; from Leith to Hamburg *passengers and cargo*); from Glasgow, Grangemouth and Dundee to Hamburg (*cargo*); from Aberdeen and Middlesbro' to Hamburg (*cargo*); from Leith to Bremen (*cargo*); from Leith to Copenhagen (*passengers and cargo*).

Lord Line. *See* Head Line and Lord Line.

Oakwin Steamship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Preston Steam Navigation Co., Ltd.; from East and West Coast Ports of the United Kingdom to Principal Ports of Baltic and Norway (*passengers and cargo*).

Roland-Linie, Aktien Gesellschaft; from Antwerp and Rotterdam, Bremen to Finland, Russia and other East Seaports.

Royal Mail Steam Packet Co.; from Hamburg, Southampton, and Cherbourg to New York (*passengers, mails, and cargo*).

St. Just Steam Ship Co., Ltd. *See* Smith and Sons, Ltd., Sir Wm. Reardon.

Salvesen and Co., Chr.; from Leith to Gothenburg (*cargo*); from Grangemouth to Drontheim, calling at Stavanger, Bergen, Aalesund, and Christiansund (*cargo*).

Salvesen and Co., J. T.; from Grangemouth to Stockholm and principal Baltic Ports during the season (*cargo*).
Scandia Lines; from Hamburg to London (8-*day freight service*); from London to Gothenburg, Christiania, and Copenhagen (10-*day freight service*).
Stott and Co., Ltd., W. H.; from London and Manchester to principal Scandinavian Ports (*cargo*).

CANADA.

Anchor-Donaldson Line; *Summer service:* Glasgow, Belfast and Liverpool to Quebec and Montreal (*passengers and cargo*). *Note.*—On return voyages the vessels do not call at Liverpool. *Winter service:* Glasgow to St. John, N.B. and Halifax, N.S. (*passengers and cargo*).
Becker and Co., Ltd.; from East and West Coast Ports of the United Kingdom to Quebec (summer), and St. John, N.B. (winter) (*cargo*).
Cairns, Noble and Co., Ltd.; from Calais, Hamburg, Hull, Middlesbro', Leith, and Dundee to Montreal and Portland, Maine (*cargo*); from Mediterranean Fruit Ports to St. John, N.B., and Montreal.
Canada Steamship Lines, Ltd.; from Port Arthur to Chicoutimi, calling at Duluth, Fort William, Sault Ste, Marie, Sarnia, Detroit, Windsor, Port Colborne, Hamilton, Toronto, Rochester, Kingston, Alexandria Bay, Clayton, Brockville, Prescott, Cornwall, Montreal, Sorel, Quebec, Murray Bay, and Tadousac (*passengers and cargo*).
Canadian Government Merchant Marine, Ltd.; Montreal to London (*cargo*); Montreal to Swansea and Cardiff (*cargo*). (During the winter months all these services operate from St. John, N.B.) Vancouver to London and Antwerp (*cargo*); Vancouver to Avonmouth, Birkenhead and Glasgow (*cargo*).
Canadian Pacific Steamships, Ltd. (*passengers, freight, and mails*); from Liverpool, Glasgow, Belfast, Southampton, Antwerp, Cherbourg, Hamburg and Cobh (Queenstown) to Quebec and Montreal in summer, and to Saint John, New Brunswick, in winter (*freight only*); from London, Havre and Bristol to Montreal in summer, and Saint John, New Brunswick, in winter.
Compagnie Général Transatlantique; Havre, Plymouth, and Bordeaux to Atlantic and Pacific Coast Ports (*cargo*).
Cunard Line; from Southampton, Liverpool, London, Belfast, Glasgow, and Cherbourg to Quebec and Montreal (*passengers and cargo*), returning to Liverpool, Plymouth, London or Cherbourg; Southampton, Liverpool, London, Queenstown, Belfast, Cherbourg, Havre and Hamburg to Halifax N.S. (*passengers and cargo*).
Dominion Line; from Bristol and Liverpool to Quebec (summer), and St. John, N.B. (winter) (*passengers and cargo*).
Donaldson Brothers, Ltd. *See* Anchor-Donaldson Line.
Furness Line; from Liverpool to St. John's and Halifax (*passengers and cargo*); from London to Montreal (*cargo*); from London to Halifax (*cargo*); from London to Saint John (*cargo*).
Furness, Withy and Co., Ltd. *See* Furness Line.
Head Line and Lord Line; to Belfast, Cork, Dublin, Hamburg, Londonderry and Rotterdam from Baltimore, Galveston, Montreal, New Orleans, Quebec and St. John, N.B. (*chiefly cargo*).
Holland America Line; from Antwerp, Swansea, Rotterdam to Vancouver and other North Pacific Ports.
Houston Lines; from River Plate; from India and Far East (*both cargo services, carrying a few passengers*).
International Transport Services, Ltd. (County Lines) from Montreal (summer), St. John, N.B. (winter) to Havre, Rotterdam and Hamburg (*cargo only*).
Lord Line. *See* Head Line and Lord Line.
Manchester Liners; Manchester to Quebec and Montreal, St. John (N.B.), Philadelphia, Baltimore and Norfolk (Va.); St. Lawrence, weekly, and Philadelphia service, under normal conditions, fortnightly.
New York, Newfoundland and Halifax S.S. Co., Ltd.; from St. John's, Newfoundland, Halifax, Nova Scotia, and New York (*passengers, mails, and cargo*).
Preston Steam Navigation Co., Ltd.; from East and West Coast Ports of the United Kingdom to Quebec (summer), and St. John, N.B. (winter) (*cargo*).
Royal Mail Steam Packet Co.; from Bermuda, West Indies, and Demerara, British Guiana to St. John, N.B., and Halifax, N.S. (*passengers, mails, and cargo*); from Rotterdam, Antwerp, and London to North Pacific Ports, *viâ* Panama Canal (*passengers, mails, and cargo*); from North Pacific Ports to Glasgow, Liverpool, Southampton, London, Rotterdam, Hamburg and Antwerp.
White Star Dominion Line; from Liverpool to Quebec and Montreal during

summer season; from Liverpool to Halifax and Portland, Me., during winter season (*passengers and cargo*); and from Southampton to Halifax.

NEWFOUNDLAND.

Furness, Withy and Co., Ltd.; from Liverpool to St. John's, Halifax, Nova Scotia, and Boston (*passengers and cargo*).

CHINA AND JAPAN.

Ben Line Steamers, Ltd.; from Antwerp, Leith, London, and Middlesbrough to the Straits Settlements, China, and Japan (*cargo and a few passengers*).
Blue Funnel Line. *See* Holt and Co., Alfred.
British India Line; from Calcutta to Straits, China and Japan (*passengers and cargo*).
Canadian Pacific Railway Co.; from Vancouver to Yokohama, Kobe, Nagasaki, Shanghai, Manila, and Hong Kong (*passengers and cargo*).
China Navigation Co., Ltd.; between Hong Kong and the Chief Ports of China, including Yangtsze Kiang Ports up to Chungking, Indo-China, Siam and Straits Settlements (*passengers and cargo*).
Clan Line; Glasgow and Liverpool to Pacific Islands (*cargo*).
Furness, Withy and Co., Ltd. *See* Prince Line.
Glen Line and Shire Line; from London to Yokohama, calling at Genoa, Port Said, Penang, Port Swettenham, Singapore, Hong Kong, Shanghai, Kobe, and Nagasaki (*passengers and cargo*).
Holt and Co., Alfred; from Liverpool (part loading at Glasgow and Bristol Channel Ports), and from Hamburg, Bremen and Rotterdam to Straits, Philippines, China and Japan (*passengers and cargo*).
Hugo Stinnes Linien; from Hamburg, Bremen, Antwerp, Rotterdam to Port Said, Colombo, Singapore, Hong Kong, Shanghai, Kobe, Yokohama, Tientsien.
Java-China-Japan Lyn; from the Principal Ports of the Netherland East Indies to the Philippine Islands, China and Japan (*passengers and cargo*).
Nippon Yusen Kaisha; from Yokohama, *viâ* China, Straits Settlements, Colombo, Suez, and Marseilles to London (*passengers and cargo*).
Osaka Shosen Kaisha; North Continental Ports to China and Japan.
Peninsular and Oriental Line; from London to Straits Settlements, China and Japan (*mails, passengers and cargo*) (fortnightly).
Prince Line; from New York and Norfolk, Va., to Japan, China, Philippines *viâ* Panama Canal; from China, Philippines, Java, and Straits Settlements to Boston, New York, Philadelphia, Baltimore *viâ* Suez (*cargo*).
Rickmers-Linie; from Antwerp and Hamburg to Singapore, Manila, Hong Kong, Shanghai, Dalny, Kobe, Yokohama, and Vladivostock (*freight*).
Shire Line. *See* Glen Line and Shire Line.
Wilh. Wilhelmsen; from Norway, Sweden, Denmark, Finland, Hamburg, and Antwerp to principal ports of China and Japan (*cargo*).

FRANCE (NORTHERN), BELGIUM, ETC.

American-Hawaiian Steamship Co.; from Los Angeles, Portland, San Francisco, Seattle, and Tacoma to Antwerp, Hamburg, and Havre, calling at Glasgow, Liverpool, and London (*fortnightly cargo services*).
Bennett Line; from Goole and London to Amsterdam, Rotterdam, Calais, Dunkirk, and Hamburg (*cargo*).
Bristol Steam Navigation Co., Ltd.; from Bristol, Plymouth, Swansea and Gloucester to Amsterdam, Rotterdam, and Antwerp, and from Hamburg to Gloucester (*cargo*).
British Rhineland Navigation and Transport Co., Ltd. *See* Neptune Line.
Brussels Steamship Co., Ltd.; from London to Brussels (*cargo*).
Burnham Shipping Co., Ltd.; from Cardiff to Antwerp, Rotterdam, and Hamburg (*cargo*).
Burton, Smart and Orford, Ltd. *See* Neptune Line; and Smart's Continental Line.
Compagnie Générale Transatlantique; from London to Bordeaux, Nantes, and La Pallice (*passengers and cargo*).
Constantine (R. A.) and Donkin, Ltd; from Middlesbrough to Calais, Havre, Antwerp, Rotterdam, and Amsterdam (*passengers and cargo*).
Cork Steam Ship Co., Ltd.; from Liverpool, Manchester, and Southampton to Amsterdam, Rotterdam, Dunkirk, Antwerp, and Ghent; from Glasgow to Antwerp and Ghent; from Belfast to Ghent (*cargo and passengers*).

Cunard Line; from Liverpool, Manchester, Glasgow, and Swansea to Havre, St. Malo and Dieppe (*cargo*).

Dens and Co., Ltd.; from London to Havre (*cargo*).

Ellerman and Bucknall Steamship Co., Ltd.; from Australia.

Ensign Shipping Co., Ltd.; from Hull and London to Amsterdam, Rotterdam, and Hamburg (*cargo*).

General Steam Navigation Co., Ltd.; from East Coast Ports of England to Hamburg, Amsterdam, Rotterdam, Harlingen, Ostend, Ghent, Antwerp, Dunkirk, Havre, Charente (*cargo*); Bordeaux (*passengers and cargo*).

Gibson and Co., Ltd., George; from Leith, Grangemouth, Dundee and Aberdeen to Antwerp, Rotterdam, Amsterdam, Hamburg, Rouen, Dunkirk and Ghent (*cargo*).

Great Western Railway; from Fishguard and Weymouth to Waterford, Rosslare, Guernsey and Jersey (*passengers and cargo*).

Head Line and Lord Line; Belfast, Cork, Dublin, and Londonderry to and from Amsterdam, Antwerp, Dunkirk, Hamburg, Ghent, Bremen, and Rotterdam (*chiefly cargo*).

Holland Steamship Co., Ltd.; from London to Dutch Ports (*passengers and cargo*).

Hull and Netherlands Steamship Co., Ltd.; from Hull to Rotterdam, Amsterdam and Harlingen (*passengers and cargo*).

Hutchinson, Ltd., J. P.; from West Coast Ports of England to Rouen, Nantes, Bordeaux and Hamburg (*cargo*).

Kaye, Son and Co., Ltd.; from London to North French Ports (*cargo*).

Lancashire and Yorkshire Railway; from Hull to Dutch Ports (*passengers and cargo*).

Limerick Steamship Co., Ltd.; from Limerick and Cork to Dunkirk, Calais, Havre, Rotterdam, Amsterdam, and Antwerp (*passengers and cargo*).

London and North-Eastern Railway (Great Central Section); from Grimsby to Antwerp, Hamburg and Rotterdam (*passengers and cargo*). (Great Eastern Section); from Harwich to Hook of Holland, Antwerp and Rotterdam (*cargo only*); from Harwich to Zeebrugge (*passengers—summer season only*).

Lord Line. *See* Head Line and Lord Line.

Marine Mercantile Co., Ltd.; from East Coast Ports of England to Rotterdam, Antwerp, Amsterdam, and Havre (*cargo*).

Neptune Line; from London to Rotterdam, Cologne, and other Rhine Ports (*bi-weekly freight service*); from Hull, Goole, King's Lynn, and other U.K. Ports to Rotterdam, Cologne, and other Rhine Ports (*weekly freight service*).

Ocean Belgian Steam Navigation Co., Ltd. *See* Dens and Co.

Park, Ltd., R. and J.; from London to North French Ports (*cargo*).

Rankin and Son, James; from Leith and Grangemouth to Dutch Ports (*cargo*).

Roland-Linie, Aktien Gesellschaft; from Hamburg and Bremen to England (different lines).

Royal Mail Steam Packet Co.; from Liverpool and Southampton to French, Spanish, and Portuguese Ports to Madeira, Las Palmas, Teneriffe, St. Vincent (C.V.), Brazil, Uruguay, and Argentina (*passengers, mails, and cargo*); Southampton and Cherbourg to New York (*passengers, mails, and cargo*).

Smart's Continental Lines; from London to Antwerp, Boulogne, Havre, and Rouen (*bi-weekly freight service*).

Walford Lines, Ltd.; from U.K. Ports to France, Belgium and Holland.

Wilsons and N.E.R. Shipping Co., Ltd.; from Hull to Dunkirk, Ghent, Antwerp and Hamburg.

Zeeland Steamship Co., Netherland's Royal Mail Line; from Folkestone to Flushing (*daily day service, mails, cargo and passengers*).

INDIA, BURMAH AND CEYLON.

Anchor Line; Glasgow and Liverpool to Gibraltar, Port Said, Suez and Bombay (*fortnightly, passengers and cargo*). *Note.*—On the return voyage the vessels call at Marseilles in addition.

Anchor-Brocklebank and Well Lines; Glasgow and Liverpool to Calcutta direct (*cargo*); Hamburg, Rotterdam, Antwerp, Middlesbro' and London to Port Said, Colombo, Madras and Calcutta (*cargo*).

Anderson, Green and Co., Ltd. *See* Orient Line.

Asiatic Steam Navigation Co., Ltd.; from Calcutta to Chittagong and Rangoon; from Calcutta to Rangoon and Moulmein; from Calcutta to Bombay *viâ* Ceylon, calling at Coast Ports; from Calcutta, Rangoon, and Madras to Port Blair (Andaman Islands) (*mails and passengers in all cases*).

Bibby Line; from Liverpool and London to Marseilles, Port Said, Port Sudan, Colombo and Rangoon (*passengers and cargo*).

Blue Funnel Line. *See* Holt and Co., Alfred.
Bombay and Persia Steamship Steam Navigation Co. ; between Indian and Red Sea Ports and Persian Gulf.
British India Line; from London and Middlesbrough to Calcutta, Bombay, and Madras (*passengers and cargo*); coasting to all principal Ports in Japan, China, Straits, India, Burma, Ceylon, and Persian Gulf from Calcutta and/or Bombay (*passengers and cargo*).
City Line; from Glasgow and Liverpool to Principal Ports of India (*passengers and cargo*).
Clan Line; from Glasgow, Liverpool to Colombo, Calcutta, Madras, Chittagong, Bombay, Malabar Coast (*cargo*).
Ellerman and Bucknall Steamship Co., Ltd.; New York and U.S.A. Atlantic Ports to Indian Ports (*passengers and cargo services*).
Ellerman and Bucknall Steamship Co., Ltd.; from New York (*regular passenger and cargo services*).
Ellerman and Bucknall Steamship Co., Ltd.; United Kingdom and Continental Ports to Persian Gulf (*regular cargo service*).
Hall Line; outward services: from Liverpool to Bombay and Karachi, *viâ* Suez Canal (*passengers and cargo*); from Liverpool to Marmagao and Malabar Coast Ports, calling at Lisbon, Bombay, and for Karachi (*passengers and cargo*): these vessels sometimes load at Newport, Glasgow, and Manchester and occasionally call at Marseilles and Naples. Homeward services: from Bombay to Marseilles and Liverpool (*passengers and cargo*); from Karachi to Marseilles and Liverpool (*passengers and cargo*); from Madras Coast to Marseilles, London, and Liverpool (*cargo*); from Malabar Coast to Marseilles, London and Liverpool (*cargo*); from Rangoon to Marseilles and Liverpool (*cargo*); from Rangoon to Alexandria and Liverpool (*cargo*); from Colombo to Marseilles, London, and Liverpool (*cargo*)
Hamburg-Amerika Linie; Hamburg to the Far East (Line A, weekly; Line B, fortnightly).
Harrison Line; from Liverpool, Newport and Swansea to Calcutta (*cargo*).
Henderson and Co.; from Glasgow and Liverpool to Calcutta and Madras (*cargo*).
Holland, British India Line; from Hamburg, Antwerp, Rotterdam to Principal Ports on the East and West Coast of Inda. Also to Rangoon (Burmah), Colombo (Ceylon).
Holt and Co., Alfred; from Colombo to Liverpool (*passengers and cargo*), not calling at Colombo outwards.
Houston Line: from Canada (*cargo services, carrying a few passengers*).
Mogul Steamship Co.; from Birkenhead to Calcutta (*cargo*).
Orient Line (Mail Steamers); from Tilbury the vessels call at Colombo, on their way to Australia, and also on the return voyage (*passengers, cargo, and mails for Commonwealth of Australia*).
Peninsular and Oriental Line; from London and Marseilles to Bombay and Colombo, calling at Port Said and Aden (*mails, passengers, and cargo*) (weekly); from London to Colombo and Calcutta, calling at Malta (occasionally), Port Said and Aden (*passengers and cargo*) (usually fortnightly).
Topham, Jones and Railton, Ltd.; from London to Calcutta, Madras, Bombay, and Colombo (*cargo*).
Turner and Co. *See* Asiatic Steam Navigation Co., Ltd.
Wilh. Wilhelmsen; from Norway, Sweden, Denmark, Finland, Hamburg and Antwerp to Principal Ports of India and Ceylon (*cargo*).

THE MEDITERRANEAN, PORTUGAL, AND SPAIN.

African Steamship Co.; from Liverpool to principal Mediterranean Ports (*passengers and cargo*).
Anchor Line; Cruises—round the World: Glasgow—New York to West Indies; Glasgow—New York to Mediterranean.
Anderson, Green and Co., Ltd. *See* Orient Line.
Armstrong, Lord and Co.; from Ports on East Coast of United Kingdom to principal Mediterranean Ports (*cargo*).
"Artus" Line. *See* Hugo Stinnes Linie.
Bibby Line; from Liverpool and London to principal Mediterranean Ports (*passengers and cargo*).
Bland Line; from Gibraltar to Tangier and Casablanca (*mail, passenger and cargo service*) weekly; to Melilla and Oran, fortnightly; to Ceuta, Tetuan, Larache, Kenitra, Rabat, Mazagan, Saffii and Mogador (*passenger and cargo service*).

British India Line; from London and Middlesbrough to principal Mediterranean Ports (*passengers and cargo*).
Burnham Shipping Co., Ltd.; from Cardiff to Marseilles, Algiers, Tangier, and Gibraltar (*passengers and cargo*).
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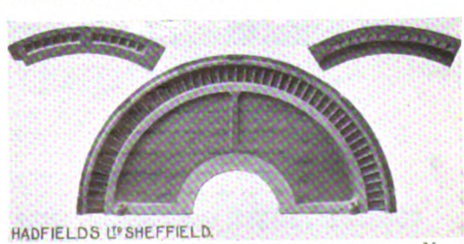

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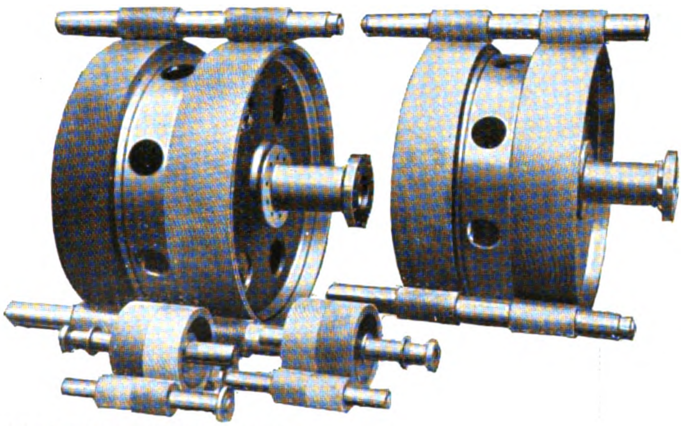

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b. battleship; *b.cr.* battle cruiser; *cr.* cruiser; *a.cr.* armoured cruiser; *f.l.* flotilla leader; *l.cr.* light cruiser; *s.cr.* scout cruiser; *s.cl.cr.* second-class cruiser; *d.* destroyer; *t.b.d.* torpedo-boat destroyer; *c.d.* coast defence ship.

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